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Review of the implementation of the recommendations of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space

Note by the Secretary-General

Pursuant to General Assembly resolutions 56/51 of 10 December 2001, 57/116 of 11 December 2002 and 58/90 of 9 December 2003, the Secretary-General has the honour to transmit, for the attention of the General Assembly, the attached report of the Committee on the Peaceful Uses of Outer Space on the implementation of the recommendations of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III).

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Report of the Committee on the Peaceful Uses of Outer Space on the implementation of the recommendations of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III)

Summary

A wide range of space applications affects many aspects of daily life throughout the world. In the broadest sense, the capabilities enabled by using space to observe, measure and allow instantaneous communications from any part of the world to any other part have far-reaching practical implications. Space applications provide invaluable tools that can be used to address many of the global tasks facing the world and to improve human living conditions. These applications can be used in such areas as achieving a sustainable world, protecting the environment, enabling all people to benefit from global communications, better managing and alleviating the effects of natural disasters, enhancing capacity-building in all parts of the world, providing for telemedicine and tele-health in underprivileged regions and providing for regional economic development that would otherwise not be possible.

The present report is a manifestation of the efforts made by Member States, entities of the United Nations system, other intergovernmental organizations and non-governmental entities to make a reality of the possibilities enunciated in "The Space Millennium: Vienna Declaration on Space and Human Development", adopted by the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III), held in Vienna from 19 to 30 July 1999. Under the theme "Space benefits for humanity in the twenty-first century", UNISPACE III was convened to take advantage of new opportunities for international cooperation in space activities to address the challenges faced by humanity. The primary objectives of UNISPACE III were (a) to promote effective means of using space solutions to address problems of regional or global significance; (b) to strengthen the capabilities of Member States, especially developing countries, to use the results of space research for economic and cultural development; and (c) to enhance international cooperation in space science and technology and its applications. The Vienna Declaration provides a strategy to address global challenges in the future through the use of space science and technology and their applications.

The implementation of the recommendations of UNISPACE III supports the overarching development agendas set by the Millennium Summit of the United Nations, the World Summit on Sustainable Development and the World Summit on the Information Society in such areas as the eradication of extreme poverty and hunger, education, health and protection of the environment. The accomplishments to date in the follow-up to UNISPACE III provide many specific examples of the contributions of space science and technology and their applications in support of global and regional development agendas and in gaining benefits for society at large.

World economic activity, when measured in terms of present national economic output, is worth $36 trillion. Annual space expenditure currently stands at about $100 billion, made mostly by government and commercial entities operating at the national, regional and global levels. In terms of their potential for solving global

problems, space activities provide high leverage on the investment made. The recommendations for action contained in the present report seek to extend that leverage even further by building on existing capabilities established by government and non-governmental entities to enhance the capacity of space activity with a view to improving human living conditions.

The establishment of action teams under the voluntary leadership of Member States proved to be a unique and effective mechanism for initiating the implementation of the recommendations of UNISPACE III. More than 50 Member States and some 40 intergovernmental and non-governmental organizations, including 15 entities of the United Nations system, participated in the work of the action teams established by the Committee on the Peaceful Uses of Outer Space. The process of initiating the implementation of the recommendations through the work of action teams permitted progress to be made throughout the year and helped to avoid sole reliance on the resources available to the Secretariat, while ensuring that primary responsibility for providing policy guidance on and coordinating implementation at the global level remained with the Committee and its subsidiary bodies through their consideration of agenda items.

Together with Member States, entities of the United Nations system, intergovernmental and non-governmental organizations, as well as the private sector, the Committee has set the pace for the implementation of the recommendations of UNISPACE III. The plan of action presented in chapter VI (paras. 228-316) proposes further specific actions and identifies entities willing to undertake some of those actions, as well as the expected benefits in the following areas:

(a) Use of space to support overarching global agendas for sustainable development;

(b) Developing coordinated, global space capabilities;

(c) Use of space to support specific agendas to meet human development needs at the global level;

(d) Overarching capacity development.

A summary of proposed actions, entities to carry out those actions and expected benefits as contained in the plan of action is provided in annex I to the report.

The five-year review of 2004 was called for by the General Assembly in its resolution 54/68 of 6 December 1999 and is a critical milestone in the implementation of the recommendations of UNISPACE III. By strengthening cooperation and contributing to common goals and objectives, Member States, United Nations entities, intergovernmental and non-governmental organizations, other national and regional institutions and industry can provide the essential support and political will to enable the space science and technology community to become a driving force to support development agendas.

The present report provides a road map for the further development of space capabilities to advance human development. The next step involves detailed planning and the declaration of a collective commitment to making space tools more widely available by moving from the demonstration of the usefulness of space technology to a more broadly based operational use of space-based services. The recommendations for further action contained in the present report concern the mechanisms needed for

improved global coordination of space activities, the establishment of the necessary frameworks for standards, the further development of existing or planned space systems into global systems and the need for new resources to make space capabilities more readily available to all users. The Committee on the Peaceful Uses of Outer Space seeks the endorsement and the participation of Member States in the activities recommended.

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I. Introduction

1. The Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III), held in Vienna from 19 to 30 July 1999, was convened at the threshold of the new millennium, which presented significant opportunities for human development through advances in space science and technology. However, the global community was also faced with unprecedented challenges to its goal of sustainable development. The States that participated in UNISPACE III resolved to strengthen cooperation to help meet those challenges and to maximize opportunities for human development through the use of space science and technology and their applications.

2. UNISPACE III addressed a broad range of subjects related to maximizing the benefits of space activities to meet the needs of people, particularly in developing countries, and to promote sustainable development to enhance the human living conditions in all countries. The States participating in UNISPACE III unanimously adopted a resolution entitled "The Space Millennium: Vienna Declaration on Space and Human Development",[1] which contained the nucleus of a strategy to address global challenges in the future.

3. In its resolution 54/68 of 6 December 1999, the General Assembly took note with satisfaction of the report of UNISPACE III and endorsed the Vienna Declaration. The Assembly recognized the contributions made by Member States and civil society, including non-governmental entities and the young generation, to the success of UNISPACE III.

A. Background to UNISPACE III

4. The United Nations accorded importance to the promotion of international collaboration in space activities from as early as the beginning of the space age, which was marked by the successful launch of Sputnik I in 1957. The General Assembly established the Committee on the Peaceful Uses of Outer Space in 1959.

5. The Committee, with its Scientific and Technical Subcommittee and Legal Subcommittee, has served as a focal point for international cooperation in the peaceful uses of outer space. The Committee and its Legal Subcommittee have played a pivotal role in the development and adoption by the United Nations of the five outer space treaties and the five sets of legal principles and declarations, establishing the international legal regime governing outer space activities.[2]

6. The Committee has also played a key role in the organization of the United Nations global conferences on outer space. Many initiatives resulted from the United Nations conferences on the exploration and peaceful uses of outer space that were held in 1968 and 1982. One of the most important outcomes was the creation and expansion of the United Nations Programme on Space Applications.[3] Under the responsibility of the United Nations Expert on Space Applications, the Programme has carried out a wide range of activities to strengthen the capacity of countries, particularly developing countries, to use and benefit from space science and technology and their applications.

7. One of the major accomplishments of the Programme, following the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE 82), was the establishment of regional centres for space science and technology education. International efforts led by the Programme resulted in the inauguration in India, in 1995, of the regional Centre for Space Science and Technology Education in Asia and the Pacific, followed by regional centres inaugurated in 1998 in Morocco, for French-speaking countries in Africa, in 1998 in Nigeria, for English-speaking countries in Africa, and in 2003 in Brazil and Mexico, for the Latin American and Caribbean region.

8. In the years that followed UNISPACE 82, space applications and the use of space technology forged rapidly ahead, with new technologies and techniques spawning both greater use and increased effectiveness of existing applications and creating new ones. The number of countries with space capabilities and countries using space technology increased. There have also been major advances in space-based observations of the Earth's atmosphere, oceans, surface and biosphere. Satellite communications have resulted in greater global interdependence and brought distant parts of the world closer together. In addition to services in the field of transportation, new applications of global navigation satellite systems have emerged in such areas as surveying and mapping, Earth sciences, agriculture, environmental monitoring, disaster management, telecommunications and precision timing.

9. The emerging opportunities for greater cooperation in space activities led to the adoption by the General Assembly, in 1996, of the Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries.[4] The Declaration stresses that States are free to determine all aspects of their participation in international cooperation in space activities, to be carried out on an equitable and mutually acceptable basis, and recognizes commercial space activities as a mode for international cooperation.

10. At the same time, the Committee has recognized the increasing challenges faced by humanity. Rapid population growth, resulting in the expansion of human activities, in particular industrial activities, and in increasing demand to meet the basic needs of people, continues to have an adverse impact on the condition of the planet. The consequences include land and coastal degradation, air and water pollution, loss of biodiversity, deforestation and degradation of living conditions. Many people, in particular in developing countries, where lives depend on natural resources, are caught in a vicious circle of environmental degradation and poverty. Globally, the health of more than a billion people is affected each year by infectious diseases, some of which are sensitive to weather variability and global climate change. Hundreds of natural disasters have affected populations in many countries around the world every year, causing considerable damage. Their impact on developing countries has been particularly severe. In some instances, disasters have destroyed in a matter of minutes all the progress in social and economic development made by a developing country over a period of years. While the revolution in information and communications technologies has led to many positive effects, the international community has become increasingly concerned that it could lead to widening the gap between those who use the technologies and those who do not. These challenges were addressed in the series of United Nations

global conferences held in the 1990s and in the early 2000s, which repeatedly stressed the importance for all humanity of sustainable development.

11. The Committee has recognized that improved space capabilities and increasing opportunities for international cooperation could assist in dealing with those challenges. This led to the decision taken by the General Assembly in 1997 to convene UNISPACE III, under the theme "Space Benefits for Humanity in the Twenty-first Century", to address the challenges facing humanity and to take advantage of new opportunities through international cooperation in space activities.

12. The primary objectives of UNISPACE III were:

(a) To promote effective means of using space solutions to address problems of regional or global significance;

(b) To strengthen the capabilities of Member States, especially developing countries, to use the results of space research for economic and cultural development;

(c) To enhance international cooperation in space science and technology and its applications.

13. The Committee on the Peaceful Uses of Outer Space and its Scientific and Technical Subcommittee acted respectively as the Preparatory Committee and the Advisory Committee for UNISPACE III. An important role was also played by the regional preparatory conferences, held for Asia and the Pacific in Kuala Lumpur in May 1998; held for Africa and Western Asia in Rabat in October 1998; held for Latin America and the Caribbean in Concepción, Chile, in October 1998; and held for Eastern Europe in Bucharest in January 1999. Organized within the framework of the United Nations Programme on Space Applications, the regional conferences provided opportunities to States that were not members of the Committee on the Peaceful Uses of Outer Space to become aware of the objectives to be pursued and issues to be discussed at UNISPACE III. More importantly, the regional conferences served to consolidate regional inputs that were reflected in the recommendations of UNISPACE III. The Office for Outer Space Affairs, which serves the Committee and its subsidiary bodies, acted as the executive secretariat of UNISPACE III.

B. Unique organizational aspects of UNISPACE III

14. The Committee stressed that the Conference should yield concrete results and that realistic and feasible follow-up activities should be planned to implement the recommendations made by the Conference. To that end, it was agreed that the recommendations should be sharply focused, limited in number, and should indicate well-defined goals.

15. The agenda of UNISPACE III covered a wide range of thematic areas in which space science and technology and their applications could contribute to promoting sustainable development and enhancing human living conditions. UNISPACE III addressed scientific knowledge of the Earth and its environment and the practical applications of space science and technology, while stressing the importance of education and training, of promoting the potential economic and societal benefits,

including commercial benefits, and of furthering international cooperation, including the review of the status of international space law.

16. The General Assembly, in its resolution 52/56 of 10 December 1997, encouraged Member States, entities of the United Nations system and intergovernmental and non-governmental organizations with space-related activities, space-related industries, as well as young professionals and university students, to contribute actively to achieving the objectives of UNISPACE III.

17. Member States, space agencies, entities of the United Nations system and intergovernmental and non-governmental organizations engaged in space-related activities contributed to achieving the objectives of UNISPACE III by addressing various technical issues and policy matters and making recommendations to the main committees through the Technical Forum, which was one of the main bodies of UNISPACE III. The Technical Forum held some 40 workshops, seminars, round-table meetings, special sessions and discussion panels. Its activities included the Space Generation Forum, a global forum organized for and by young professionals and university students interested in space activities. The Technical Forum was open to all UNISPACE III participants and offered a unique opportunity for government representatives, industry managers, researchers and university students freely to exchange ideas and views.

18. UNISPACE III was convened as a special session of the Committee on the Peaceful Uses of Outer Space, open to all Member States. Organizing costs were kept to a minimum and no separate conference budget was requested. In the years preceding UNISPACE III, cost-saving measures were introduced by the Committee, including shortening of some of the annual sessions of the Committee and its subsidiary bodies and utilization of unedited verbatim transcripts in lieu of verbatim and summary records. Austria, as the host country, made a significant contribution by covering the costs for meeting facilities and services. The capacity of the executive secretariat was also augmented by volunteer interns and by cash and in-kind voluntary contributions from member States and space-related international organizations and industries. Details of the unique organizational aspects of UNISPACE III can be found in a report on the organizational matters relating to the holding of UNISPACE III (see A/C.4/54/9), which was submitted to the General Assembly at its fifty-fourth session.

C. Results of UNISPACE III

19. UNISPACE III was attended by more than 2,500 participants, including representatives of 100 States and 30 international organizations and representatives from the private sector.

20. The most important result of UNISPACE III was the adoption of the Vienna Declaration on Space and Human Development. In that Declaration, UNISPACE III recommended 33 specific actions[5] that should be taken by the international community to meet the global challenges in protecting the Earth's environment and managing its resources, using space applications for human security, development and welfare,[6] advancing scientific knowledge of space and protecting the space environment, enhancing education and training opportunities and ensuring public awareness of the importance of space activities, strengthening and repositioning of

space activities in the United Nations system and promoting international cooperation.

21. In the Vienna Declaration, UNISPACE III also invited the General Assembly to declare the period from 4 to 10 October each year World Space Week, in order to celebrate at the international level each year the contributions that space science and technology can make to the betterment of human living conditions.

22. In its resolution 54/68, the General Assembly endorsed the Vienna Declaration as adopted by UNISPACE III. The Assembly urged Governments, and organs, organizations and programmes within the United Nations system, as well as intergovernmental and non-governmental organizations and industries engaged in space-related activities, to take the action necessary for the effective implementation of the Vienna Declaration. The Assembly also agreed that it would appraise and review, at its session in 2004, the implementation of the outcome of UNISPACE III and consider further actions and initiatives.

II. Mechanisms for implementing the recommendations of UNISPACE III

23. As early as 1999, the Committee on the Peaceful Uses of Outer Space considered and agreed upon a measure to reflect the outcome of UNISPACE III in the future work of the Committee and its subsidiary bodies. The Committee recommended that the Scientific and Technical Subcommittee reconvene its Working Group of the Whole to assist the Subcommittee in considering its future work in the light of the recommendations of UNISPACE III. The Committee also facilitated consideration by its subcommittees of new issues following the outcome of UNISPACE III by adopting a revised structure of the agendas of the Scientific and Technical Subcommittee and the Legal Subcommittee.[7]

A. Revised structure of the agendas of the Scientific and Technical Subcommittee and Legal Subcommittee

24. At its forty-second session, in 1999, immediately preceding UNISPACE III, the Committee revised the structure of the agendas of its subcommittees. The revised structure has enabled the subcommittees to introduce new agenda items either under multi-year work plans, with objectives to be achieved within a fixed period of time, or as single issues or items for discussion, to be considered for one session only.

25. At its thirty-seventh session, following UNISPACE III, the Scientific and Technical Subcommittee agreed that the revised structure of its agenda would facilitate the consideration of the 33 specific actions contained in the Vienna Declaration that addressed global challenges. The Subcommittee agreed to consider those issues under multi-year work plans.

B. Plan of action of the Office for Outer Space Affairs

26. In its resolution 54/68, the General Assembly requested the Secretary-General to recommend measures to ensure that the Office for Outer Space Affairs was provided with adequate resources to implement the actions listed in paragraph 13 of that resolution, based on the recommendations of UNISPACE III. In response to that request, the Office prepared its plan of action to implement the recommendations of UNISPACE III and submitted its plan to the Committee in 2000 (see A/AC.105/L.224).

27. The plan of action submitted by the Office consisted of measures to implement the recommendations of UNISPACE III in the following areas: (a) strengthening the role of the Committee on the Peaceful Uses of Outer Space and its subcommittees in promoting international cooperation in the use of outer space; (b) initiating a capacity-building programme in areas relating to space law; (c) strengthening the activities of the United Nations Programme on Space Applications by increasing synergy among the major components of the Programme such as the organization of workshops and training courses, provision of technical advisory services, including support to the regional centres for space science and technology education, affiliated to the United Nations, and administration of long-term fellowship programmes; (d) promoting the use of space technologies within the United Nations system; (e) establishing and strengthening partnership with industry; (f) strengthening partnership with intergovernmental and non-governmental organizations; (g) initiating a public outreach programme and a programme for young people; and (h) strengthening publication and information services. The Committee, at its session in 2000, endorsed the plan of action proposed by the Office and recommended its implementation.

28. In its resolution 55/122 of 8 December 2000, the General Assembly requested the Secretary-General to ensure the full implementation of the plan with the necessary resources in 2002. Subsequently, all the measures contained in the plan of action were included in the programme of work of the Office for the biennium 2002-2003 (see A/56/6 (Sect. 6)).

C. Establishment of action teams

29. In 2001, the Scientific and Technical Subcommittee agreed that the recommendations of UNISPACE III could be assessed and implemented through voluntary leadership by individual Member States and their appropriate governmental institutions in relation to specific actions listed in the Vienna Declaration. The Subcommittee also agreed that the leaders would conduct discussions within their teams to seek the broadest possible participation of non-governmental entities. Noting that 33 actions were recommended in the Vienna Declaration as elements of a strategy to address global challenges in the future, the Subcommittee agreed to conduct a survey among Member States to identify their level of interest and priority for each action. Through the survey, conducted in early 2001, each Member State was invited to indicate whether it wished to be the leader or a member of a team established for the purpose of carrying out a recommended action. Each Member State was also invited to identify non-governmental entities

that wished to be members of a team. The Office for Outer Space Affairs compiled the results of the survey for consideration by the Committee at its session in 2001.

30. On the basis of the results of the survey, the Committee established 11 action teams to implement the recommendations of UNISPACE III that had been accorded highest priority by Member States or for which there had been an offer by a Member State to lead associated activities. The Committee established the twelfth action team at its session in 2003. The action teams established by the Committee, their chairs and the number of countries and organizations that are members of the action teams are indicated in table 1 below. By the beginning of June 2004, 51 States Members of the United Nations, 15 entities of the United Nations system, 10 international organizations that have observer status with the Committee and 13 other intergovernmental and non-governmental entities had participated as members in one or more action teams. The full list of the membership of all the action teams is contained in annex IV to the present report.

Table 1
Action teams established by the Committee on the Peaceful Uses of Outer Space

Recommendation (in order of appearance in the Vienna Declaration)		*Chair(s)*	*Number of countries and organizations participating in the action team (as at 1 June 2004)*	
			Countries	*Organizations*
1	Develop a comprehensive, worldwide environmental monitoring strategy	Iran (Islamic Republic of), Russian Federation and Syrian Arab Republic	23	11
2	Improve the management of the Earth's natural resources	India	27	6
4	Enhance weather and climate forecasting	Portugal and World Meteorological Organization	25	5
6	Improve public health services	Canada	19	8
7	Implement an integrated, global system to manage natural disaster mitigation, relief and prevention efforts	Canada, China and France	41	14
9	Improve knowledge-sharing through the promotion of universal access to space-based communication services	Malaysia and Greece	10	1
10	Improve universal access to and compatibility of space-based navigation and positioning systems	United States of America and Italy	38	14
11	Promote sustainable development by applying the results of space research	Nigeria	27	8

Recommendation (in order of appearance in the Vienna Declaration)	*Chair(s)*	*Number of countries and organizations participating in the action team (as at 1 June 2004)*	
		Countries	*Organizations*
14 Improve the international coordination of activities related to near-Earth objects	United Kingdom of Great Britain and Northern Ireland	17	7
17 Enhance capacity-building by developing human and budgetary resources	Japan	25	7
18 Increase awareness among decision makers and the general public of the importance of space activities	United States and Austria	22	14
32 Identify new and innovative sources of financing to support the implementation of the recommendations of UNISPACE III	France	15	6

31. The revised structure of the agendas of the Scientific and Technical Subcommittee and Legal Subcommittee (see paragraphs 24 and 25 above) has enabled those bodies to provide policy guidelines to the action teams to implement the recommendations of UNISPACE III. The work of the action teams complemented the work conducted by the subsidiary bodies on the agenda items relating to the global challenges set forth in the Vienna Declaration.

D. National efforts

32. The role of the Governments of Member States was critical in making progress in the implementation of the recommendations of UNISPACE III. In examining the proposals on the mechanism to implement the recommendations of UNISPACE III in 2001, the Scientific and Technical Subcommittee took into account the pivotal role of Governments. The Committee on the Peaceful Uses of Outer Space noted that some Governments were implementing various recommendations of UNISPACE III through the adoption of national space policies.[8] In 2003, the Committee also recalled that the responsibility for implementing the recommendations rested with member States, the Office for Outer Space Affairs under the guidance of the Committee and its subsidiary bodies, intergovernmental organizations for multilateral cooperation and other entities engaged in space-related activities.

33. Governments of Member States continue to play an essential role in ensuring the successful implementation of the recommendations of UNISPACE III. Member States have contributed to the work of the Committee and its subcommittees at their annual sessions and to the work of the action teams. Some member States have also supported activities of the Office for Outer Space Affairs aimed at implementing the recommendations of UNISPACE III, within the framework of the United Nations Programme on Space Applications. In addition, member States have taken action at

the national level and in the context of international cooperation to implement some of the recommendations of UNISPACE III. A number of space activities carried out by member States to promote international cooperation have supported actions called for in the Vienna Declaration. The list of countries that have reported to the Committee on their activities to promote international cooperation in space activities is provided in annex VI to the present report.

E. Other mechanisms

34. In response to a call by the General Assembly in its resolution 54/68, some intergovernmental and non-governmental organizations[9] have taken initiatives to implement the recommendations of UNISPACE III. Some organizations have convened international conferences to examine the recommendations of UNISPACE III and to identify possible follow-up action that they could take within their mandate. Further information on the activities of intergovernmental and non-governmental organizations as follow-up to UNISPACE III is contained in paragraphs 119-129 of the present report. A list of intergovernmental and non-governmental organizations that reported to the Committee on their activities in response to the recommendations of UNISPACE III is contained in annex VI to the present report.

35. Some other organizations have also launched initiatives to implement recommendations of UNISPACE III. For example, in 2000, the International Astronautical Federation (IAF) launched an initiative under the theme "Priorities for space activities in the twenty-first century" to engage non-governmental entities in the implementation of selected recommendations resulting from UNISPACE III. The Space Generation Advisory Council (SGAC) created teams to support the implementation of many of the recommendations contained in the Vienna Declaration, as well as the work of the action teams established by the Committee on the Peaceful Uses of Outer Space.

III. Progress made in implementing recommendations

A. Progress made in the Committee and its subsidiary bodies

1. Achievements of the Committee and its subsidiary bodies in the consideration of agenda items

36. The Committee on the Peaceful Uses of Outer Space and its Scientific and Technical Subcommittee and Legal Subcommittee addressed some of the elements contained in the Vienna Declaration through consideration of items on their agendas at their annual sessions. The agreement reached by the Committee at its session in 1999[10] to revise the structure of the agendas of both subcommittees resulted in a revitalization of the work of those bodies and a strengthening of their role in promoting international cooperation in the peaceful uses of outer space. Annex III to the present report contains information on the achievements of the Committee and its subsidiary bodies to date as a result of consideration of issues introduced under the revised agenda structure.

(a) Committee on the Peaceful Uses of Outer Space

37. The Committee on the Peaceful Uses of Outer Space first considered the item entitled "Space and society" in 2002. Consideration of the item provided opportunities for non-governmental entities to inform the Committee of their efforts to increase awareness among the general public of the importance of space activities. Starting in 2004, the Committee will focus its discussions under this agenda item on "Space and education". In accordance with its three-year work plan, the Committee aims to develop, by 2006, specific and concrete action plans for bringing space issues into education, enhancing education in space and expanding space tools for education, with inputs to be provided by its action teams on knowledge-sharing, capacity-building and increasing awareness (recommendations 9, 17 and 18 of UNISPACE III). Through the discussions on this issue, the Committee also aims to further strengthen cooperation with the United Nations Educational, Scientific and Cultural Organization (UNESCO).

38. At its 2004 session, the Committee also addressed "Space and water" as a new agenda item. The consideration of this item is timely, as the work of the Committee could take into account the results of the activities held in 2003 relating to the International Year of Freshwater and also contribute to the discussions on water, which has been selected as one of the three thematic clusters to be addressed for the period 2004-2005 in the Commission on Sustainable Development at its 2005 session (see also para. 231).

(b) Scientific and Technical Subcommittee

39. The Scientific and Technical Subcommittee agreed at its thirty-seventh session, in 2000, that the elements contained in the Vienna Declaration could be addressed through the consideration of agenda items under multi-year work plans. The following actions called for in the Vienna Declaration have been considered by the Subcommittee under multi-year work plans, with specific objectives to be achieved within a fixed period of time: (a) means and mechanisms for strengthening inter-agency cooperation and increasing the use of space applications and services within and among entities of the United Nations system;[11] (b) implementation of an integrated, space-based global natural disaster management system;[12] (c) use of nuclear power sources in outer space;[13] (d) space debris;[14] and (e) space-system-based telemedicine.[15]

40. The results achieved under the item relating to inter-agency cooperation are described further in paragraphs 84-92 below. Under the item relating to disaster management, the Subcommittee identified national and regional space-based systems that could be considered for a global system to manage natural disasters. The Subcommittee also recognized the importance of various international initiatives, such as the work of the Ad Hoc Working Group on Disaster Management Support of the Committee on Earth Observation Satellites (CEOS), efforts of the secretariat of the International Strategy for Disaster Reduction, the Charter on Cooperation to Achieve the Coordinated Use of Space Facilities in the Event of Natural or Technological Disasters (the "International Charter 'Space and Major Disasters'") and the International Satellite System for Search and Rescue (COSPAS-SARSAT). The Subcommittee also examined existing satellite and data distribution systems that could be used for disaster management. The work conducted by the Subcommittee under the agenda item is being complemented by the work of the

Action Team on Disaster Management, with support from the Office for Outer Space Affairs.

41. The item on the use of nuclear power sources in outer space had been on the agenda of the Scientific and Technical Subcommittee before UNISPACE III. Under the work plan adopted for the period 1998-2003, the Subcommittee, through its Working Group on the Use of Nuclear Power Sources in Outer Space, produced a review of international documents and national processes potentially relevant to the peaceful uses of nuclear power sources in outer space (A/AC.105/781). The Subcommittee took a step further by adopting a new work plan, for the period 2003-2006, for developing an international technically based framework of goals and recommendations for the safety of nuclear power source applications in outer space (A/AC.105/804, annex III).

42. The item on space debris had also been on the agenda of the Scientific and Technical Subcommittee before UNISPACE III. Under the work plan adopted for the period 1996-1998, the Subcommittee prepared a technical report on space debris (A/AC.105/720), which reflected the collective knowledge and expertise of the members of the Committee on the measurements of space debris, modelling the space debris environment, risk assessment and space debris mitigation measures. The Inter-Agency Space Debris Coordination Committee (IADC) also provided valuable support for the preparation of the report. Following UNISPACE III, the Subcommittee took a further step by reviewing the international application of International Telecommunication Union (ITU) standards and the recommendations of IADC concerning the disposal of satellites in geosynchronous orbit at the end of their useful life. The Subcommittee also considered debris mitigation measures and the passivation and limitation of mission-related space debris for launch vehicles, including cost-benefit aspects. In accordance with a new work plan covering the period 2002-2005, the Subcommittee established a working group in 2004 to consider comments from States members of the Committee on the Peaceful Uses of Outer Space on the proposals on space debris mitigation presented by IADC to the Subcommittee in 2003. The provisional agenda for the forty-second session of the Scientific and Technical Subcommittee, in 2005, as agreed upon by the Subcommittee, includes the item on space debris with the following programme of work, as reflected in the report of the Subcommittee (A/AC.105/823, annex II, para. 20): (a) space debris; (Member States begin annual reporting on a voluntary basis of national activities to implement the proposals on space debris mitigation; (A/AC.105/761, para. 130)); (Consideration by the Working Group on Space Debris, as necessary, of the proposals on space debris mitigation and such further related comments as may be received).

43. Following its consideration of the use of space technology for the medical sciences and public health, the Subcommittee adopted a work plan for the period 2004-2006 to consider space-based telemedicine. By the end of the work plan, it is anticipated that the Subcommittee will identify ways and means of enhancing the capacity of developing countries to use space-based telemedicine systems and possible bilateral or multilateral projects to develop further space-based telemedicine applications through international cooperation.

(c) Legal Subcommittee

44. Since before UNISPACE III, the Legal Subcommittee has been considering the item on matters relating to the definition and delimitation of outer space and the character and utilization of the geostationary orbit, including consideration of ways and means to ensure the rational and equitable use of the geostationary orbit without prejudice to the role of ITU. The Subcommittee reached an agreement in 2000 on some aspects concerning the use of the geostationary orbit (A/AC.105/738, annex III), including a recommendation, inter alia, that where coordination was required between countries with a view to the utilization of satellite orbits, including the geostationary satellite orbit, the countries concerned should take into account the fact that access to that orbit had to take place, inter alia, in an equitable manner and according to the ITU Radio Regulations. The agreement was transmitted to ITU.

45. Another item that has been on the agenda of the Legal Subcommittee since before UNISPACE III is the item on the status and application of the five United Nations treaties related to outer space. Consideration of this item responds directly to one of the actions called for by UNISPACE III, to promote the efforts of the Committee in the development of space law by inviting States to ratify or accede to, and inviting intergovernmental organizations to declare acceptance of, the outer space treaties developed by the Committee. Following UNISPACE III, the Subcommittee established a working group, to conduct its work from 2002 to 2004, to review the status of the treaties, their implementation and obstacles to their universal acceptance, as well as the promotion of space law, especially through the United Nations Programme on Space Applications.

46. The introduction of "items to be considered under work plans" in the agenda structure has proved to be a particularly valuable mechanism to achieve specific objectives and yield practical results within a fixed timeframe. This is evidenced by the results achieved under the multi-year work plan on the review of the concept of the "launching State" and the work conducted by the working group established to consider that agenda item. In 2002, the working group adopted a set of conclusions (A/AC.105/787, annex IV, appendix). The work to translate those conclusions into a draft General Assembly resolution was conducted in the working group established under the agenda item on the status and application of the five United Nations treaties relating to outer space. At its session in 2004, the working group agreed on the text of the draft resolution, in which the General Assembly would, among other things, recommend that Member States consider enacting and implementing national laws authorizing and providing continuing supervision of the activities in outer space of non-governmental entities under their jurisdiction; consider the conclusion of agreements in accordance with the Convention on International Liability for Damage Caused by Space Objects (the "Liability Convention", General Assembly resolution 2777 (XXVI), annex) with respect to joint launches and cooperation programmes; and submit information on a voluntary basis on their current practices regarding on-orbit transfer of ownership of space objects.

47. The introduction of "single issues/items for discussion" in the agenda structure has also proved to be a valuable mechanism with regard to the examination of the preliminary draft protocol on matters specific to space assets to the Convention on International Interests in Mobile Equipment (opened for signature in Cape Town on 16 November 2001), which led to increased cooperation and interaction with the

International Institute for the Unification of Private Law (Unidroit) and the convening of two intersessional consultative meetings hosted by France and Italy. During the intersessional period, members of the Committee on the Peaceful Uses of Outer Space and the Office for Outer Space Affairs were also invited to participate in the first session of a committee of Unidroit composed of governmental experts for the consideration of the preliminary draft protocol. The secretariat of Unidroit also participated in the annual sessions of the Legal Subcommittee during the consideration of the matter.

48. The cross-participation in the work of the Committee and that of Unidroit contributed not only to making substantial progress in ensuring that international legal regimes being developed by bodies other than the Committee and its Legal Subcommittee that affect space activities would be consistent with the existing United Nations treaties governing outer space, but also to enhancing cooperation between intergovernmental bodies responsible for the development of international law.

49. Participation by international organizations in the work of the Legal Subcommittee, in particular under the agenda item on information on the activities of international organizations relating to space law, has drawn the attention of the Subcommittee to activities of other international bodies that could be of significance to its work. One example is the report of the World Commission on the Ethics of Scientific Knowledge and Technology (COMEST) of UNESCO, which was brought to the attention of the Subcommittee in 2002. That led to the establishment of the Group of Experts on the Ethics of Outer Space, charged with studying the report of COMEST; the report of the Group of Experts (A/AC.105/C.2/L.240/Rev.1) was submitted to the Subcommittee and transmitted to UNESCO in 2003.

50. The consideration of a new agenda item, entitled "Practice of States and international organizations in registering space objects", under the multi-year work plan for the period 2004-2007, will also contribute to implementing the recommendation of UNISPACE III relating to space law. By the end of the work plan, the Legal Subcommittee is expected to identify common practices and to make recommendations for enhancing adherence to the Convention on Registration of Objects Launched into Outer Space (the "Registration Convention", General Assembly resolution 3235 (XXIX), annex).

2. Progress achieved by action teams established by the Committee on the Peaceful Uses of Outer Space

51. The mechanism of implementing some of the recommendations of UNISPACE III through the establishment of action teams, under the voluntary leadership of Governments, has proved to be very successful.

52. Each of the action teams assessed the capability and use of space technology, in particular to meet the needs of developing countries, within the thematic area assigned to it. The assessment conducted by the action teams was unprecedented in both scope and depth. Their analyses of the current situation, their findings on the impediments to making space technology work effectively to solve the most acute problems faced by humanity and their recommendations on how to do so constitute a solid foundation for the implementation phase. A summary of the findings, recommendations, actions taken to date to implement the recommendations and

impediments to the implementation is contained in annex V to the present report. The full list of membership of the action teams is contained in annex IV. The action teams brought together both States and international organizations to achieve common objectives by dedicated individuals with diverse expertise from different countries and organizations.

53. The findings and recommendations of the action teams are oriented towards achieving the following main objectives of UNISPACE III: (a) promoting effective means of using space technology to assist in the solution of problems of regional or global significance; and (b) strengthening the capabilities of Member States, in particular developing countries, to use the applications of space research for economic, social and cultural development. The Committee recognizes the importance of capacity-building, particularly that of developing countries. The findings of and actions proposed by the Committee relating to capacity-building, aimed at meeting the second objective mentioned above, are reflected in paragraphs 228-316 below.

(a) Methods and organization of the work of the action teams

54. The action teams were established by the Committee in 2001 and 2003 without an increase in the regular budget of the programme on the peaceful uses of outer space to support their activities in the period that followed UNISPACE III. The States, organizations and individuals who contributed to the work of the action teams dedicated their time, expertise and, in some cases, financial resources on a voluntary basis. Those who served as chairpersons, in particular, made extraordinary efforts to ensure progress in their action teams by generating ideas, coordinating the views of the members, preparing a number of documents for use by their teams or responding to numerous requests by the Committee to report on their work and to provide inputs for the work of the Committee and its subcommittees.

55. Most of the work of the action teams has been accomplished by means of electronic mail and teleconferences among members. Many action teams convened their meetings during the annual sessions of the Committee and its Scientific and Technical Subcommittee, taking advantage of the presence of members participating in those sessions. All the action teams fulfilled their reporting responsibilities by presenting their progress reports to the Committee and its Scientific and Technical Subcommittee at each of their sessions since 2002.

56. Some action teams also met during the workshops organized by the Office for Outer Space Affairs that addressed themes relevant to their work, on the margins of the meetings of the Inter-Agency Meeting on Outer Space Activities or at international space-related conferences organized by other entities. Some of the action teams also convened open forums, in which any interested experts and individuals were invited to participate and contribute their knowledge to the work of the action teams.

(b) Overview of the major findings of the action teams

57. The work of the 12 action teams collectively provides a comprehensive picture of the wide range of applications of space technologies. A close review of the products that would result from various applications reveals their complementary nature and the synergies that could be built between them. For instance, in the area

of sustainable development, the use of global navigation satellite system (GNSS) technologies supports the protection of the environment, the management of natural resources, agriculture, telemedicine and disaster management. Products from programmes undertaken to protect the environment could also be useful in the management of natural resources, disaster management, global health and in many other areas of application. Through the organized and coordinated dissemination and exchange of information on products between different areas of application, the results achieved in one area can serve as a stepping stone for many other areas, thus building synergies and avoiding duplication. The challenge lies in determining whether the products of any given application meet the requirements of other applications.

(c) Requirements for space technology to become operational

58. In their assessment of the current situation, the action teams emphasized the usefulness of space technologies for decision-making in areas relating to environmental monitoring strategies, the management of natural resources, public health, disaster management and sustainable development.

59. These assessments also showed that, for space technologies to become operational and yield practical benefits in developing countries, the following requirements would need to be met: capacity-building; the exact identification of user needs; the involvement of all stakeholders in the development of space-based systems and services; increased awareness among policy makers; the development of long-term strategies; and political commitment.

60. Some action teams indicated the need to move beyond simple efforts to increase awareness towards providing assistance to developing countries in the integration of space technology into basic infrastructure.

(d) Overview of the recommendations made by the action teams: information, coordination, training and awareness

61. Some of the action teams recognized that the recommendations under their responsibility could best be implemented by supporting existing initiatives and efforts.

62. Some of the common elements found in the recommendations of the action teams included better dissemination of and access to information; better coordination of existing efforts; the development of policies, long-term plans and guidelines; the enhancement of efforts to provide education and training opportunities; and raising awareness of the benefits of space activities among policy makers.

63. Regarding measures to achieve better coordination, some action teams suggested the creation of international entities to respond to identified needs that were not being addressed by any existing coordination and cooperation efforts and mechanisms, while other action teams identified existing organizations that could assume a coordination role.

64. The development of long-term strategies and policies was considered necessary by some action teams, such as in the areas of environmental monitoring and in applying results of space research to enhance sustainable development.

65. Most of the action teams produced compendiums of existing efforts or success stories in the areas of their responsibility, with the aim of contributing to increasing awareness among policy makers and the general public or enhancing knowledge-sharing among experts and programme managers.

66. The establishment of a single portal of relevant web sites or databases, which would include information on capacity-building efforts as a means of disseminating information widely and of facilitating access to it was also recommended by some action teams. The Office for Outer Space Affairs was identified by some action teams as the entity best equipped to set up and host web site(s) for the purposes of disseminating relevant information and organizing proposed workshops or training courses.

3. Additional members of the Committee and additional organizations that have been granted permanent observer status with the Committee on the Peaceful Uses of Outer Space

67. The Committee on the Peaceful Uses of Outer Space was established first as an ad hoc body of the General Assembly, in 1958, with 18 members. When it was established as a permanent body, in 1959, membership increased to 24 States. Between 1959 and 1999, when UNISPACE III was convened, its membership was enlarged on five occasions, reaching a total of 61 States.

68. Since UNISPACE III, the membership of the Committee has expanded, reaching a total of 65 States.[16] In its resolution 56/51 of 10 December 2001, the General Assembly terminated the practice of sharing seats on a rotating basis between Cuba and Peru and between Malaysia and the Republic of Korea. The Assembly also decided to accept the membership of Algeria, Saudi Arabia and Slovakia (Pursuant to Assembly decision 45/315 of 11 December 1990, Yugoslavia ceased to be a member of the Committee.)

69. The Committee has continued its customary practice of allowing States that are not members of the Committee to participate in the open meetings of the Committee and of its subcommittees and to address those bodies. The expansion of membership of the Committee resulted in an increased number of States having opportunities to contribute to the work of the Committee and its subsidiary bodies by participating in all meetings and submitting proposals for consideration by those bodies for action.

70. In 1962, the Committee began to invite to its meetings international organizations that promoted the peaceful uses of outer space. At its second meeting, the Committee invited the Committee on Space Research (COSPAR), along with the United Nations entities UNESCO, ITU and the World Meteorological Organization (WMO), to become permanent observers. Organizations having permanent observer status with the Committee have received a standing invitation to its annual sessions and those of its subsidiary bodies and have been given opportunities to address the Committee and its subsidiary bodies in their open meetings. At the time of UNISPACE III, 13 organizations had permanent observer status with the Committee.

71. Since UNISPACE III, there has been an increase in the number of intergovernmental and non-governmental entities granted permanent observer status with the Committee. As at December 2003, the General Assembly had granted

permanent observer status with the Committee to seven more international organizations, increasing the number of organizations with such status to 20.[17]

72. At its forty-third session, in 2004, the Committee's Legal Subcommittee noted with concern a decrease in the recent years in the attendance and participation of entities of the United Nations system and organizations having permanent observer status with the Committee in the work of the Legal Subcommittee. In response to a request by the General Assembly, in its resolution 58/89 of 9 December 2003, the Committee is considering measures to enhance the participation of those entities in the work of the Committee and its subsidiary bodies.

4. Increased number of States parties to the five United Nations treaties on outer space

73. The Vienna Declaration called for action to promote the efforts of the Committee on the Peaceful Uses of Outer Space in the development of space law by inviting States to ratify or accede to, and inviting intergovernmental organizations to declare acceptance of, the outer space treaties developed by the Committee. Following UNISPACE III, the number of ratifications of all five treaties on outer space increased. As at January 2004, the number of States that had ratified the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (the "Outer Space Treaty", General Assembly resolution 2222 (XXI), annex) had increased from 95 in 1999 to 98; for the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (the "Rescue Agreement", General Assembly resolution 2345 (XXII)), the figure rose from 85 to 88; for the Liability Convention, from 80 to 82; for the Registration Convention, from 40 to 45; and for the Agreement Governing the Activities of States on the Moon and other Celestial Bodies (the "Moon Agreement", Assembly resolution 34/68, annex), from 9 to 10. The Legal Subcommittee, in particular, is continuing its efforts and is considering further measures to increase the number of States that ratify or accede to the outer space treaties and the number of intergovernmental organizations that declare acceptance of them.

B. Progress achieved through national and regional efforts

74. Limited progress was achieved in implementing the recommendations of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE 82). In its resolution 37/90 of 10 December 1982, the General Assembly decided that all new or expanded activities contained in that resolution, which expanded the mandate of the United Nations Programme on Space Applications, were to be funded mainly through voluntary contributions from States. The limited progress in the implementation of the recommendations of UNISPACE 82 could be attributed to a reliance mainly on voluntary contributions.

75. In contrast to the follow-up process of UNISPACE 82, there has been much emphasis on the primary responsibility of Member States for the implementation of the recommendations of UNISPACE III, and many of them have indeed carried out activities that contributed to the implementation of various recommendations. Those activities have been carried out through national programmes, or through bilateral or

multilateral cooperation. The list of countries that reported to the Committee on their activities to promote international cooperation in space activities that contributed to the implementation of the recommendations of UNISPACE III is provided in annex VI to the present report.

76. There are also many regional entities that have contributed to the implementation of the recommendations of UNISPACE III. The European Space Agency (ESA), for example, has been playing an important role in promoting the cooperation and coordination of space activities among European countries. ESA has also long been one of the major sponsors of a number of activities organized by the United Nations Programme on Space Applications that respond to recommendations of UNISPACE III. Shortly after UNISPACE III, in November 1999, the International Relations Committee of ESA identified priority areas for follow-up actions of UNISPACE III and the activities organized jointly with the Office for Outer Space Affairs reflect those priority areas. With the signing of the framework agreement on 25 November 2003 to strengthen cooperation with the European Union, it is anticipated that Europe will further strengthen its efforts to respond to societal needs through the use of space science and technology and their applications, which would also respond to many of the actions as called for in the Vienna Declaration.

77. The Network of Space Science and Technology Education and Research Institutions for Central-Eastern and South-Eastern Europe provides opportunities for participating countries to enhance cooperation in space activities through joint projects and conferences that contribute to implementing the recommendations of UNISPACE III. Some of the countries in the region of Eastern Europe also participate in activities of ESA by concluding cooperation agreements with ESA and carry out space-related activities within the framework of the European Union as its members.

78. In Asia and the Pacific, the Economic and Social Commission for Asia and the Pacific (ESCAP) harmonizes various initiatives under the umbrella of the United Nations, including space-related activities, and has contributed to the implementation of the recommendations of UNISPACE III (see para. 110).

79. The initiatives of Asia-Pacific Multilateral Cooperation in Space Technology and Applications (AP-MCSTA), originally proposed by China, Pakistan and Thailand in 1992, have evolved to become a regional, intergovernmental mechanism for multilateral cooperation. Through joint projects, AP-MCSTA has contributed to the implementation of recommendations of UNISPACE III in the region in such areas as the management of natural resources and disaster management. Discussions are currently under way on the institutionalization of AP-MCSTA by establishing an Asia-Pacific space cooperation organization, which would carry out fundamental research in space technology and its applications, execute projects of common interest and organize education and training activities.

80. Countries in Asia and the Pacific are also pursuing cooperation in space activities through less formal mechanisms, such as the Asia-Pacific Regional Space Agency Forum (APRSAF), each meeting of which is hosted by Japan and a co-host country. Since its first meeting in 1993, APRSAF has evolved from a forum for the exchange of general information among countries of the region into an action-oriented entity that addresses specific issues of interest to the region and

implements recommendations resulting from its plenary meetings. The tenth APRSAF meeting, held in Thailand in January 2004, agreed to strengthen cooperation in such areas as disaster and environmental monitoring, space communications and space education.

81. Countries in Latin America and the Caribbean considered the implementation of the recommendations of UNISPACE III at the Fourth Space Conference of the Americas, held in Cartagena de Indias, Colombia, in May 2002. The Conference adopted the Declaration of Cartagena de Indias, which urged States of the region to implement the recommendations of UNISPACE III. A Plan of Action, also adopted by the Conference, instructed the pro tempore secretariat of the Conference to promote cooperation and coordination of programmes or projects in such areas as the protection of the environment, disaster management, space law, education and research and development in science, technology and space applications. In its resolution 58/89, the General Assembly noted the desire of Member States of the region to institutionalize the Space Conference of the Americas.

82. Many African countries participate in a number of space-related regional initiatives and forums, such as the Africa Geographic Information System (GIS) Forum and African Association of Remote Sensing of the Environment conferences, some of which are organized by subregional groupings. Those initiatives and forums provide opportunities for African countries to discuss and exchange ideas on space science and technology issues, including such issues as enhancing awareness and applications through capacity-building, the provision of infrastructure and data-sharing for the benefit of Africa.

83. The recently launched New Partnership for Africa's Development (NEPAD) is, in part, a response to repeated calls from Africa's scientists to develop and apply science and technology to meet the core challenges of food production, health, energy, information and communications, environmental and disaster management, mining and industrial production. The operation of a joint satellite programme among the key players in Africa is one of the proposals made to meet some of these challenges. The countries involved will collaborate in building capacity to support space programmes in Africa. Through this and other initiatives, NEPAD is providing a platform for scientific excellence in Africa in order to be globally competitive and contributing to the socio-economic development of the continent.

C. Activities of entities of the United Nations system that have contributed to the implementation of recommendations of UNISPACE III

1. Achievements of the Inter-Agency Meeting on Outer Space Activities

84. The Inter-Agency Meeting on Outer Space Activities, which has been serving as a focal point for inter-agency coordination and cooperation in space-related activities since its establishment in 1975, contributed to the work of the Scientific and Technical Subcommittee during its consideration of the agenda item relating to inter-agency coordination and cooperation under a three-year work plan (see paragraph 40) and submitted a set of proposals to the Subcommittee for its consideration. Through this process, the Meeting created synergy between its efforts and those of the Committee on the Peaceful Uses of Outer Space and its Scientific

and Technical Subcommittee to increase awareness of the contributions that space applications can make towards the economic, social and cultural work programmes of entities of the United Nations system that have not used space applications.

85. For example, the results of the survey conducted by the Office for Outer Space Affairs in 2001 (see A/AC.105/C.1/L.241 and Corr.1 and A/AC.105/C.1/L.241/Add.1) indicated that, among the entities of the United Nations system, particularly at the senior management level, there was limited awareness of the relevance of space applications to their mandates, including mandates closely related to the promotion of sustainable development.

86. As regards the barriers to the wider use of space applications and services, the Inter-Agency Meeting noted that there were different constituencies in the governing bodies of each organization of the United Nations system. Delegations of the same State to different intergovernmental forums within the United Nations system were not necessarily fully aware of each other's positions and directions pursued on similar, space-related matters. The Meeting therefore felt that closer coordination and more timely information-sharing among government agencies represented at different forums on issues relating to space activities could be achieved through existing government mechanisms, resulting in coordination efforts similar to those being pursued by the entities of the United Nations system at the secretariat level.

87. The Inter-Agency Meeting has further strengthened its role as the body to coordinate space-related activities within the United Nations system, by agreeing, for example, to create a consolidated web site that would contain information on education and training activities in space-related areas organized within the United Nations system. In the preparatory process leading up to the World Radiocommunication Conference, held in 2003, members of the Inter-Agency Meeting concerned agreed to keep each other informed of their positions on the protection of the radio frequency bands necessary for their activities.

88. The annual reports of the Secretary-General on the coordination of outer space activities within the United Nations system have provided, since 1975, comprehensive information on space-related activities carried out within the United Nations system. Following UNISPACE III, the Inter-Agency Meeting revised the structure of the annual report a number of times to reflect the structure of the Vienna Declaration, thus allowing readers to identify those entities which were carrying out activities that responded to specific actions called for in the Declaration. The Meeting also took the initiative to use the report to focus its discussions on specific activities and initiatives that should be supported by the United Nations system as a whole.

89. In its resolution 56/51 of 10 December 2001, the General Assembly took note of a letter from the Chairman of the Committee on the Peaceful Uses of Outer Space to the Secretary-General drawing his attention to the need to consider the contributions of space science and technology to a greater extent in major United Nations conferences, and invited all entities of the United Nations system to identify recommendations of major United Nations conferences that could benefit from space applications. In response to that invitation, the Inter-Agency Meeting prepared a list of actions recommended in the Plan of Implementation of the World Summit on Sustainable Development,[18] to which space science and technology and

their applications had direct or potential relevance and agreed to invite United Nations entities to complete the list with their space-related activities and programmes that corresponded to the recommended actions. The Committee endorsed the proposal by the Inter-Agency Meeting that States members of the Committee should conduct a similar exercise. Once completed, the integrated list could serve as a comprehensive survey of the space community's response to the outcomes of the World Summit.

90. Following UNISPACE III, some entities of the United Nations system that had not been involved in the Inter-Agency Meeting began to contribute to its work, including the Office of the United Nations High Commissioner for Refugees (UNHCR), the United Nations Office for Project Services (UNOPS) and the secretariat for the Convention on Biological Diversity. Those entities which had been involved in the Inter-Agency Meeting, such as the Economic Commission for Africa, ESCAP, the United Nations Environment Programme (UNEP), the Food and Agriculture Organization of the United Nations (FAO), UNESCO, the International Civil Aviation Organization, the World Health Organization (WHO), ITU, WMO, the International Atomic Energy Agency and the secretariat of the International Strategy for Disaster Reduction continued to contribute to its work.

91. In order to further increase interactions with member States of the Committee, since its session in 2004, the Inter-Agency Meeting has begun to convene an informal open session to which representatives of member States of the Committee are invited. The first informal session, attended by 10 United Nations entities and 13 member States of the Committee, addressed challenges and opportunities in the United Nations system in education and training in space-related areas.

92. In the area of capacity-building, the Inter-Agency Meeting took steps, in cooperation with members of the Committee, towards further enhancing inter-agency cooperation to maximize available resources. The Meeting agreed to create, with the participation of States members of the Committee, inventories of equipment, education and training materials, satellite data sets and other capacity-building resources provided by United Nations entities to the beneficiaries of their technical cooperation projects. Once established, the inventories would be made available to all entities of the United Nations system.

2. Achievements of the Office for Outer Space Affairs

93. Following UNISPACE III, the Office for Outer Space Affairs developed a plan of action pursuant to General Assembly resolution 54/68 of 6 December 1999. The plan of action was endorsed by the Committee in 2000.

94. In the area of strengthening the role of the Committee and its subcommittees in promoting international cooperation in the peaceful uses of outer space, the Office for Outer Space Affairs provided technical and administrative support to the work of all the action teams established by the Committee to implement the recommendations of UNISPACE III. The Office also provided, upon request, including through the activities of the United Nations Programme on Space Applications, substantive advice to some action teams.

95. In 2002, the Office for Outer Space Affairs launched a capacity-building programme in space law. To date, the following has been achieved:

(a) A series of workshops on space law has been launched. Two workshops have been held, one in The Hague in 2002 and the other in Daejon, Republic of Korea, in 2003, contributing to the work of the Legal Subcommittee in achieving full understanding and acceptance of the five United Nations treaties on outer space;

(b) Space-law-related documents and publications have been prepared and disseminated, including an annual report on the current status of signatures and ratification of and accession to the various multilateral international agreements on outer space;

(c) A database on national space laws has been developed and maintained;

(d) A directory on educational opportunities in space law, containing information on institutions offering courses and education in space law, has been developed and regularly updated.

96. In planning and managing the post-UNISPACE III activities of the United Nations Programme on Space Applications, the United Nations Expert on Space Applications adopted a new strategy in response to paragraph 11 (d) of General Assembly resolution 54/68, which called for strengthening of the activities of the Programme. The Programme now concentrates on a few themes of major importance for developing countries and establishes objectives that can be achieved in the short and medium term, while maintaining a few long-term capacity-building activities.

97. The priority themes of the Programme are (a) disaster management; (b) satellite communications for tele-education and telemedicine applications; (c) monitoring and protection of the environment, including the prevention of infectious diseases; (d) management of natural resources; and (e) education and capacity-building, including research areas in basic space sciences. Other areas of work include developing capability in enabling technologies, such as the use of global navigation and positioning satellite systems, spin-offs of space technology, applications of small satellites and micro-satellites and promoting the participation of private industry in activities of the Programme. Within each priority theme, the Programme pursues the following main objectives: (a) capacity-building; and (b) building awareness among decision makers in order to strengthen local support for the operational use of space technologies.

98. The Programme has launched training modules consisting of a series of regional workshops and follow-up activities. Post-UNISPACE III regional workshops in the use of space technology for disaster management started in 2000 and, by the end of 2003, the Programme had convened five such workshops and had begun to define and develop follow-up pilot projects for Southern Africa and South America. Four regional workshops and two international meetings on the use and applications of GNSS were also organized in the period 2001-2003. The second international meeting, held in December 2003, identified priority follow-up projects and initiatives that should be supported by the Programme in the period 2004-2005.

99. The number of workshops and training courses organized by the United Nations Programme on Space Applications has increased in the past few years. The Programme also supports additional training courses and workshops organized by the regional centres for space science and technology education, affiliated to the

United Nations, for the regions of Africa, Asia and the Pacific and Latin America and the Caribbean.

100. Since UNISPACE III, the number of requests received by the Office for Outer Space Affairs from Member States and intergovernmental and non-governmental organizations for technical advisory services has continued to increase. The Office has expanded the scope of its technical advisory services to respond to operational needs. An example of the latter is the service provided by the Office through an agreement with the International Charter "Space and Major Disasters", which enabled the Office to start providing services in July 2003 on a round-the-clock basis to entities of the United Nations system that needed spatial data and information to respond to disaster-related emergencies. Between July 2003 and March 2004, United Nations entities have requested the activation of the Charter five times: for floods in Nepal and the Dominican Republic; for landslides in the Philippines; and for earthquakes in Indonesia and Morocco. Currently, five United Nations entities (the Office for Outer Space Affairs, UNOPS, UNHCR, UNESCO and WHO) have provided the contact information of their focal points and are involved in the arrangement.

101. The Programme also established a network to distribute satellite data on the entire African continent to African institutions. With contributions from the Government of the United States, the Programme began to distribute, upon request, sets of Landsat data covering any area of interest to African institutions.

102. The Programme has strengthened its support to participants of past training courses in their efforts to develop a critical mass of personnel trained in the use of space technologies in developing countries. An example is the follow-up evaluation exercise carried out between 2001 and 2004 to assess the local impact of the series of annual United Nations/Sweden international training courses on remote sensing education for educators, which began in 1990. The exercise was aimed at assessing the local impact of the courses, at identifying key elements of success or impediments and at determining the nature and scope of support that should be provided to strengthen the work of past participants in the courses.

103. The Programme expanded its outreach activities for young people. Through a series of symposiums on enhancing the participation of youth in space activities organized from 2000 to 2002 with the sponsorship of the Government of Austria and ESA, the Programme provided opportunities for young professionals and students to exchange information and experiences on their efforts to promote space activities.

104. The symposiums also strengthened the work of the SGAC, consisting of young professionals and students interested in space activities from different countries around the world. SGAC convened its annual assemblies during the symposiums mentioned above to review their activities and prepare plans for future actions, including a request to the Committee on the Peaceful Uses of Outer Space to participate in its work as a permanent observer. In its resolution 56/51 of 10 December 2001, the General Assembly endorsed the decision of the Committee to grant permanent observer status to SGAC.

105. Since the proclamation by the General Assembly of World Space Week from 4 to 10 October, on the recommendation of UNISPACE III, the Office for Outer Space Affairs has worked closely with the Spaceweek International Association, a non-governmental organization with permanent observer status with the Committee, to

celebrate the Week around the world through the organization of special events aimed at promoting and enhancing global awareness of space and human development.

106. In 2001, the Office refurbished the permanent space exhibit in the United Nations Office at Vienna. The exhibit now includes an interactive computer program, a Moon rock and a replica of a biosphere experiment from the International Space Station, models of spacecraft and rockets, as well as panels with satellite images. The exhibit attracts the attention of many visitors to the Vienna International Centre, especially school children, and contributes to increasing public awareness of the benefits of space activities.

107. The Office enhanced its International Space Information Service and made available a searchable index of the United Nations Register of Objects Launched into Outer Space. The web site of the Office also includes an index that provides information on the status of signatures and ratification of the five United Nations treaties on outer space.

3. Achievements of entities of the United Nations system

108. In its resolution 54/68, the General Assembly urged entities of the United Nations system to take the necessary action for the effective implementation of the Vienna Declaration. In response to that call, some entities of the United Nations system actively contributed to the work of the action teams. For example, WMO provided substantial assistance to the Action Team on Weather and Climate Forecasting in developing recommendations and preparing the final report as co-chair; ITU provided an important tool for exchange of documents among members of the Action Team on Global Navigation Satellite Systems by hosting a web board and kept the action team informed of developments concerning the World Radiocommunication Conference relating to the use of frequency spectrums by GNSS; a number of United Nations entities, including the Office for the Coordination of Humanitarian Affairs, the secretariat of the International Strategy for Disaster Reduction, UNOPS, UNEP, UNHCR, UNESCO and WMO, provided substantive contributions to the work of the Action Team on Disaster Management; UNESCO was instrumental in drawing up the recommendations of the Action Team on Capacity-building; and many entities cooperated with the action teams by responding to their requests for information on their activities.

109. As part of their mandates, a number of entities of the United Nations system carry out activities that contribute to implementing recommendations of UNISPACE III, such as the promotion of sustainable development. Many of them carry out capacity-building activities in space applications for the benefit of developing countries.

110. Immediately following UNISPACE III, the second Ministerial Conference on Space Applications for Sustainable Development in Asia and the Pacific, organized by ESCAP and held in New Delhi in November 1999, translated the recommendations of UNISPACE III into regional actions by adopting the Delhi Declaration on Space Technology Applications in Asia and the Pacific for Improved Quality of Life in the New Millennium and the Strategy and Action Plan on Space Technology Applications for Sustainable Development in Asia and the Pacific for the New Millennium. The second phase of the Regional Space Applications

Programme for Sustainable Development (RESAP II), which was launched following the Ministerial Conference, promotes regional cooperative mechanisms and operational utilization of space technology applications for such priority areas as the environment and natural resource management, natural disaster management and poverty alleviation. Through the Information, Communication and Space Technology Division of ESCAP, established in July 2002, ESCAP has also been active in promoting sustainable development applications of satellite communications and in preparing for the World Summit on the Information Society, held in December 2003. Capacity-building and human resources development continue to be key elements in all activities carried out under RESAP II.

111. As regards protection of the environment and related monitoring strategies, UNEP and the secretariat of the Convention on Biological Diversity conduct assessment and monitoring activities. UNEP has been carrying out such activities through its Global Environment Outlook process, a comprehensive international framework for environmental assessment conducted since 1995 through a network of about 40 institutions in all regions of the world. The third Global Environment Outlook report was issued in May 2002, and the next report is planned for release in 2007. Global Environment Outlook reports are being supplemented by a Global Environment Outlook Yearbook, the first of which, for the year 2003, was released in March 2004.

112. In the areas relating to the management of natural resources, the Illicit Crop Monitoring Programme of the United Nations Office on Drugs and Crime combines ground- and remote-sensing-based techniques to assist Member States in their monitoring of the extent and evolution of illicit narcotic crops in their territories. The Land Cover Map and Geodatabase for Africa (AFRICOVER) project of FAO developed an interactive land cover classification system, which has become a de facto international standard for landcover mapping and is now being considered as an International Organization for Standardization standard. The AFRICOVER programme has a concrete follow-up in a similar project, called ASIACOVER, involving seven countries in Asia. ASIACOVER is being carried out under the Global Land Cover Network initiative, promoted by FAO and UNEP. The FAO Advanced Real-Time Environmental Monitoring Information System provides long-term low-resolution satellite-based assessment of vegetation dynamics and rainfall patterns in support of the FAO Global Information and Early Warning System on Food and Agriculture. The entities involved in the Integrated Global Observing Strategy (IGOS) Partnership (IGOS-P) made further progress in the development and the implementation of IGOS, one of the recommendations contained in the Vienna Declaration. UNEP, FAO, UNESCO and WMO continue to play an essential role in the activities of IGOS-P and in the development, planning and implementation of the Global Climate Observing System, the Global Terrestrial Observing System and the Global Ocean Observing System, in particular.

113. The WMO Space Programme, launched in May 2003 to enhance weather and climate forecasting, aims to coordinate environmental satellite activities throughout all WMO programmes and to provide guidance to these and other multi-sponsored programmes on the potential of remote-sensing techniques in meteorology, hydrology and related disciplines and their applications. The long-term objectives include development of the Global Observing System as a composite system consisting of surface and space-based components, with a primary focus on matters

related to both operational as well as research and development environmental satellites and promoting high-quality satellite-related education.

114. The secretariat of the International Strategy for Disaster Reduction, which provides secretariat services to the Inter-Agency Task Force on Disaster Reduction, supported the efforts to introduce the use of space technologies, such as Earth observation and communications satellites in disaster reduction. UNEP has made an important contribution to the work of the Inter-Agency Task Force by developing and implementing the Strategic Framework on Emergency Prevention, Preparedness, Assessment, Mitigation and Response and developing the Inventory of Early Warning Systems, an Internet-based database on existing early warning systems. In addition to many activities of its Division of Early Warning and Assessment relating to the dissemination of data and information, vulnerability and risk assessment and early warning, UNEP formulated an integrated support strategy for institutional capacity-building for disaster management and established an African regional network to improve access to information on disaster events.

115. In 2002, FAO established an Emergency Operations and Rehabilitation Division to respond to needs for emergency assistance in the agricultural, livestock and fisheries sectors in developing countries affected by disasters, using increasing space-derived information. The WMO Programme for Natural Disaster Prevention and Mitigation, established in May 2003, aims to ensure effective coordination of WMO activities with those of international, regional and national organizations and will promote the delivery of increasingly accurate and reliable warnings of severe weather and climate events.

116. Through its Space Education Project, launched in 2002, UNESCO makes important contributions to capacity-building and increasing awareness and aims to enhance education in space-related subjects in schools, in particular in developing countries; to promote the integration of space subjects in the national curricula; to promote professional development programmes for teachers and educators and young professionals; to assist teachers and educators to develop educational materials adapted to their needs; and to contribute to the preparation of the next generation of the space workforce.

117. As part of its restructuring in 2003, WHO established a new E-Health Unit, which consists of five working groups, including those dealing with remote sensing, GIS and tele-health. The E-Health Unit facilitated collaboration between WHO and other United Nations entities, complementing its work in the health committee of the United Nations Task Force on Information and Communication Technologies. The WHO Regional Office for the Americas recently supported the establishment of the Inter-American Network on the Use of GIS/RS to Control Infectious Diseases. In West Asia, the Onchocerciasis Control Programme of WHO, which uses satellite technology, was successful in eliminating onchocerciasis (river blindness) from seven countries through hydrological monitoring to support targeted spraying, which killed the Simulium larvae, the main vector of the disease. WHO also uses raster layers derived from satellite images, such as land cover, digital elevation models, population density and road and river networks, to measure accessibility to health care in order to relocate, reorganize and maximize human, physical and financial resources for the most disadvantaged populations.

118. The work being carried out by the United Nations Geographic Information Working Group relates to the implementation of many of the recommendations of UNISPACE III. The Working Group was established in March 2000 by the Administrative Committee on Coordination (now known as the United Nations System Chief Executives Board for Coordination), to coordinate activities and formulate policies concerning geographical information within the United Nations system. FAO is developing its GeoNetwork, a comprehensive international standard-based spatial information infrastructure jointly with the World Food Programme, UNEP and other partners. GeoNetwork aims to improve dynamic access to and the integrated use of spatial information among FAO divisions, member States, United Nations entities, the centres associated with the Consultative Group on International Agricultural Research and other stakeholders in support of decision-making for sustainable development, by using the Internet as an inter-operable information exchange mechanism between United Nations entities, intergovernmental and non-governmental organizations and the scientific community.

D. Activities of intergovernmental and non-governmental organizations having permanent observer status with the Committee that have contributed to the implementation of the recommendations of UNISPACE III

119. In its resolution 54/68, the General Assembly urged intergovernmental and non-governmental organizations and industries conducting space-related activities to take the necessary action for the effective implementation of the Vienna Declaration. When it established action teams in 2001, the Committee stressed the importance of involving non-governmental entities in the implementation of the recommendations of UNISPACE III and agreed that those teams should identify non-governmental entities that could be invited to participate. As a result, as at June 2004, 10 out of the 20 international organizations having permanent observer status with the Committee, as well as three other intergovernmental organizations and 14 other non-governmental entities, have participated as members in the work of one or more action teams.

120. Through its open meetings, the Action Team on Disaster Management has opened an avenue for commercial entities involved in satellite manufacturing and operation, as well as the insurance industry, to contribute to its work. ESA, the European Commission and the International GPS Service have made an important contribution to the work of the Action Team on Global Navigation Satellite Systems, which also benefited from substantive inputs from such intergovernmental and non-governmental entities as the International Association of Institutes of Navigation, the International Federation of Surveyors and the International Bureau of Weights and Measures in formulating its recommendations. The International Astronomical Union (IAU) and CEOS, through its Working Group on Education and Training, has assisted the Action Team on Capacity-building in formulating its recommendations.

121. The Action Team on Near-Earth Objects has benefited from the contributions of COSPAR, IAU and the Spaceguard Foundation, which participated in the Action Team as members. The Action Team also worked with the Organization for

Economic Cooperation and Development and built upon the work of the Organization in the framework of its Global Science Forum on matters relating to near-Earth objects (NEOs). A number of international non-governmental entities contributed to the survey conducted by the Action Team on Increasing Awareness by providing information on their outreach activities and suggestions for further increasing awareness of the benefits of space activities among policy makers and the general public.

122. SGAC established working groups to examine the implementation of nearly all the recommendations contained in the Vienna Declaration and submitted its proposal and recommendations to the Scientific and Technical Subcommittee at its fortieth session, in 2003, for consideration, as necessary and appropriate, in particular by the action teams.

123. Some entities, such as ESA and IAU, contributed to the implementation of a number of recommendations of UNISPACE III by providing substantive inputs for the work of the Committee on the Peaceful Uses of Outer Space and its subsidiary bodies in the consideration of issues on their agendas.

124. Many initiatives by intergovernmental and non-governmental entities followed UNISPACE III in the area of environmental monitoring and management of natural resources. For example, in June 2001, ESA and the European Commission launched the Global Monitoring for Environment and Security (GMES), an initiative to provide independent, operational and relevant information in support of a range of policies serving sustainable objectives in areas such as environment, agriculture, fisheries, transport and regional development. CEOS launched a follow-up programme to the World Summit on Sustainable Development to demonstrate its continuing commitment to sustainable development and the long-term objectives of the World Summit and to provide a common framework for the actions undertaken by CEOS agencies individually in implementing actions called for by the World Summit. As part of this follow-up programme, ESA launched a project entitled "TIGER" to respond to the needs of African countries in water resource management. In order to respond to the growing need for more frequent and comprehensive space-derived data for weather forecasting, the European Organization for the Exploitation of Meteorological Satellites and ESA began the development of the Meteosat Second Generation system. More frequent collection of comprehensive data by the latter should assist significantly in achieving timely recognition and prediction of extreme weather phenomena.

125. Announced by ESA and the Centre national d'études spatiales during UNISPACE III, the International Charter "Space and Major Disasters" became operational in November 2000 (see also paras. 100 and 193-194). Through the Charter, satellites of the Charter members can be used to provide Earth observation images to civil protection authorities, as well as to United Nations entities responding to a major disaster. As at 1 June 2004, the Charter had been activated 55 times in response to various natural disasters, such as earthquakes, volcanic eruptions, landslides and floods, in a number of countries.

126. The International Organization of Space Communications (INTERSPUTNIK) is carrying out a number of projects using communications satellites to help bridge the gap between developed and developing countries, including the establishment of a global fleet of small communications satellites with a view to reducing lease

prices and expanding the base of potential users, mainly in developing countries. The activities of INTERSPUTNIK contribute to enhancing knowledge-sharing through the promotion of universal access to space-based satellite communications services.

127. One of the initiatives taken by the International Society for Photogrammetry and Remote Sensing (ISPRS) is expected to provide new and innovative sources of funding to support the implementation of the recommendations of UNISPACE III. The Society is developing a foundation to administer an extensive and broad-based international programme that would provide grants, scholarships, training and other forms of scientific assistance to qualified individuals and organizations pursuing or applying knowledge for the advancement of the sciences and technologies associated with disciplines in which ISPRS is active.

128. CEOS played an important role in coordinating the efforts of its members to demonstrate the usefulness of space applications in advancing sustainable development on the occasion of the World Summit on Sustainable Development. The presentations and demonstrations made by CEOS members at the World Summit and their information materials helped to increase awareness among decision makers and the general public of the importance of space activities in promoting sustainable development by applying results of space research; increasing the use of space-related systems and services by the entities of the United Nations system and by the private sector; and improving the management of the Earth's natural resources. The follow-up programme established by CEOS contemplates actions to be taken by its members in the following five areas, which would contribute to implementing recommendations of UNISPACE III: (a) education, training and capacity-building; (b) water resource management; (c) disaster management; (d) climate change; and (e) global mapping, land-use monitoring and GIS.

129. Some intergovernmental and non-governmental organizations help implement many of the recommendations of UNISPACE III as part of their continuing, mandated activities. ESA, for example, promotes international cooperation, advances scientific knowledge and enhances education and training opportunities. The activities of the International Law Association, through its Space Law Committee, contribute to the efforts of the Committee on the Peaceful Uses of Outer Space in the development of space law, as well as possibly several other recommendations, from a legal point of view.

IV. Synergies between the implementation of the recommendations of UNISPACE III and the results of global conferences held within the United Nations system and other global initiatives

130. The Vienna Declaration contains the nucleus of a strategy to address global challenges in the future. When developing that strategy, the Committee on the Peaceful Uses of Outer Space took into account the results of the global conferences held by the United Nations in the 1990s that identified priorities for promoting human development in the twenty-first century. Those priorities provided the basis for the discussions at the United Nations Millennium Summit in 2000. The goals

enshrined in the United Nations Millennium Declaration (General Assembly resolution 55/2) were examined further by subsequent United Nations global conferences in order to develop plans for subsequent actions.

131. Many of the actions called for in the Vienna Declaration have relevance to the goals and objectives of the United Nations Millennium Summit, the World Summit on Sustainable Development and the World Summit on the Information Society, all of which were convened after UNISPACE III. The implementation of actions recommended by UNISPACE III would contribute to making progress in the follow-up actions resulting from these global conferences.

132. Following UNISPACE III, the Committee on the Peaceful Uses of Outer Space and the Office for Outer Space Affairs, as well as individual members of the Committee and their space agencies, increased their efforts to bring to the attention of the global conferences of the United Nations the societal benefits derived from space science and technology and their applications. One example of such efforts is the initiative taken by the Chairman of the Committee to send a letter to the Secretary-General in 2001, drawing his attention to the need to consider the contributions of space science and technology to a greater extent in the implementation of the recommendations of major United Nations conferences (A/56/306). The Committee and its Scientific and Technical Subcommittee followed that initiative by developing a statement by the Committee to be presented to the World Summit on Sustainable Development.[19] The Committee on Earth Observation Satellites (CEOS) participated actively in the preparatory process leading to the World Summit and made important contributions to its outcome.

133. In its Plan of Implementation, the World Summit on Sustainable Development recognized satellite remote sensing and satellite global positioning as means of implementation of its recommended actions.[20] The World Summit promoted the increased use of satellites, in particular in the areas of water resource management, systematic observation of the Earth's atmosphere, land and oceans, as well as disaster management.[21]

134. The outcome of the first phase of the World Summit on the Information Society also reflects the increased efforts of the Committee and the Office to link the societal benefits of space applications to the goals of the global conferences. At its fortieth session, in 2003, the Scientific and Technical Subcommittee underlined the importance of the Summit and recommended the active participation of the Committee and the Office in both phases of the Summit (A/AC.105/804, para. 141). As contributions to the discussions in the first phase of the Summit, the Office submitted to the secretariat of the Summit the results of the United Nations/Thailand Workshop on the Contribution of Space Communication Technology to Bridging the Digital Divide, held in September 2003 (A/AC.105/810). During the first phase of the Summit, the Office also organized a panel of experts on the topic of the Workshop as one of the side events of the Summit.

135. In its Plan of Action,[22] the World Summit on the Information Society recognized the role of satellites as a means of developing and strengthening national, regional and international broadband network infrastructure. It called for support to promote the provision of global high-speed satellite services for underserved areas such as remote and sparsely populated areas.[23] The Summit also encouraged the use of unused wireless capacity, including satellites, in developed

countries and in particular in developing countries, to provide access in remote areas, especially in developing countries and countries with economies in transition, and to improve low-cost connectivity in developing countries.[24]

136. While the World Summit on Sustainable Development and the World Summit on the Information Society identified specific areas where space science and technology and their applications could play an important role, there are many other areas where they could contribute to the implementation of the outcomes of those summits and of the United Nations Millennium Declaration. Synergy between the follow-up activities of UNISPACE III and those of the global conferences of the United Nations system could be further increased.

137. The programme budget approved for the programme on the peaceful uses of outer space for the biennium 2004-2005[25] reflects the importance of increasing such synergies. It indicates that the strategy to address global challenges as articulated in the Vienna Declaration will continue to provide the policy framework for the programme, while placing particular emphasis on promoting the use of space science and technology and their applications in implementing the United Nations Millennium Declaration and follow-up actions of the World Summit on Sustainable Development.[26]

A. Synergies with the United Nations Millennium Declaration

138. The implementation of the recommendations of UNISPACE III complements the efforts made by the United Nations system as a whole to take follow-up actions to the United Nations Millennium Declaration. The synergies between those efforts are summarized in table 2 below. The Vienna Declaration called for several actions to protect the Earth's environment and to manage its resources. Those actions are based on respect for nature, one of the fundamental values identified in the Millennium Declaration.

Table 2
Synergies between the recommendations of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III) and actions called for in the United Nations Millennium Declaration

Recommendations of UNISPACE III	*Actions called for in the United Nations Millennium Declaration*
(a) Protecting the Earth's environment and managing its resources:[a]	(a) Values and principles: respect for nature;
(i) Environmental monitoring strategy;	(b) Development and poverty eradication;
(ii) Management of natural resources.	(c) Protecting our common environment;
	(d) Meeting the special needs of Africa.

Recommendations of UNISPACE III	*Actions called for in the United Nations Millennium Declaration*
(b) Using space applications for human security, development and welfare:[b]	(a) Values and principles: equality; (b) Development and poverty eradication; (c) Protecting our common environment; (d) Meeting the special needs of Africa; (e) Protecting the vulnerable.
(i) Public health;	
(ii) Disaster management;	
(iii) Tele-education;	
(iv) Sustainable development.	
(c) Enhancing education and training opportunities and ensuring public awareness of the importance of space activities:[c]	(a) Development and poverty eradication; (b) Human rights, democracy and good governance; (c) Meeting the special needs of Africa.
(i) Capacity-building;	
(ii) Information-sharing and spin-offs from space activities;	
(iii) Opportunities for children and youth to learn about and participate in space activities.	
(d) Strengthening and repositioning of space activities in the United Nations system:[d]	(a) Strengthening the United Nations; (b) Development and poverty eradication; (c) Strengthening respect for the rule of law in international as in national affairs.
(i) Reaffirming the role of the Committee on the Peaceful Uses of Outer Space and its subsidiary bodies and secretariat;	
(ii) Development of space law;	
(iii) Coordination between the Committee and other United Nations entities;	
(iv) New and innovative sources of funding;	
(v) Promotion of the peaceful uses of outer space with all States, international organizations and civil society, including industry.	

[a] As reflected in paragraph 1 (a) of the Vienna Declaration as contained in *Report of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space, Vienna, 19-30 July 1999* (United Nations publication, Sales No. E.00.I.3), chap. I, resolution 1.

[b] As reflected in paragraph 1 (b) of the Vienna Declaration as contained in *Report of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space, Vienna, 19-30 July 1999* (United Nations publication, Sales No. E.00.I.3), chap. I, resolution 1.

[c] As reflected in paragraph 1 (d) of the Vienna Declaration as contained in *Report of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space, Vienna, 19-30 July 1999* (United Nations publication, Sales No. E.00.I.3), chap. I, resolution 1.

[d] As reflected in paragraph 1 (e) of the Vienna Declaration as contained in *Report of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space, Vienna, 19-30 July 1999* (United Nations publication, Sales No. E.00.I.3), chap. I, resolution 1.

139. In particular, the implementation of the recommendations of UNISPACE III to develop a comprehensive worldwide environmental monitoring strategy (recommendation 1) and to improve the management of the Earth's natural resources (recommendation 2) would directly support many of the actions called for in the Millennium Declaration (para. 23) to protect the common environment. Space applications provide useful tools, for example, for managing forest resources and for supporting the full implementation of the Convention on Biological Diversity[27] and the Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, particularly in Africa (A/49/84/Add.2, annex, appendix II). The recommendation of UNISPACE III to improve the management of the Earth's natural resources through the use of remote sensing data would also support actions called for in the Millennium Declaration to support development and poverty eradication, for example through the development of water management strategies.

140. Addressing future global challenges, the Vienna Declaration called for action to be taken using space applications for human security, development and welfare, as contained in paragraph 1 (b). Such action supports global efforts to promote equality, another fundamental value identified in the Millennium Declaration, to ensure that no individual and no nation is denied the opportunity to benefit from social and economic development. It also contributes to social and economic development and poverty eradication, protection of the common environment and protection of the vulnerable in all parts of the world.

141. The implementation of the recommendations of UNISPACE III to improve public health services by expanding and coordinating space-based services for controlling infectious diseases (recommendation 6), for example, could help achieve the goal indicated in the Millennium Declaration to halt and begin to reverse by 2015 the scourge of malaria and other major diseases (para. 19). Remote sensing could be integrated into disease surveillance systems, to be developed into early warning systems for infectious diseases such as malaria, cholera, hantavirus and Rift Valley fever.

142. The implementation of an integrated, global system to manage natural disaster mitigation, relief and prevention efforts, another recommendation of UNISPACE III (recommendation 7), would reduce the number and effects of natural and man-made disasters and ensure that all civilian populations that suffer disproportionately the consequences of natural disasters are given every feasible assistance and protection (para. 23).

143. The Vienna Declaration called for action to promote literacy and enhance rural education by improving and coordinating education programmes and satellite infrastructure (recommendation 8), which would help achieve another goal of the Millennium Declaration, to provide equal access to all girls and boys by 2015 to all levels of education (para. 19). Providing education and training opportunities to all people is fundamental to economic, social and cultural development and to poverty eradication. Many of the actions recommended in the Vienna Declaration to enhance education and training opportunities, therefore, contribute to poverty eradication. Examples include those actions to enhance capacity-building through the development of human and budgetary resources (recommendation 17) and to encourage all States to provide their children and youth, especially females, through appropriate educational programmes, with opportunities to learn more about space

science and technology and their importance to human development (recommendation 21).

144. The Vienna Declaration also calls for action to be taken to strengthen and reposition space activities in the United Nations system, such as strengthening the coordination of mutually beneficial activities between the Committee and other United Nations entities (recommendation 29); that would help achieve better coordination between the United Nations and its agencies, an action called for in the Millennium Declaration (para. 30). The involvement of civil society in the work of the United Nations and the strengthening of partnerships with the private sector are areas in which both the Vienna Declaration and the Millennium Declaration call for action.

145. All the actions called for in the Vienna Declaration would benefit all countries, in particular developing countries, thus contributing to achieving goals enshrined in the Millennium Declaration to also meet the special needs of Africa.

B. Synergies with the Plan of Implementation of the World Summit on Sustainable Development

146. Space science and technology and their applications permeate various levels of sustainable development. They serve as a useful tool for monitoring and conducting assessments of the environment, managing the use of natural resources, providing early warnings, providing education and health services to rural and remote areas and connecting people around the world. Capacity-building in the use and applications of space science and technology provides a foundation for efforts to promote sustainable development in those areas where space-based services and systems could serve as useful tools. Synergies between the recommendations of UNISPACE III and actions called for in the Plan of Implementation of the World Summit on Sustainable Development are summarized in table 3 below.

147. The recommendation of UNISPACE III to assist States, especially developing countries, in applying the results of space research with a view to promoting the sustainable development of all people (recommendation 11) provides an overarching policy framework for linking the follow-up actions of UNISPACE III to the implementation of the outcome of the World Summit on Sustainable Development. That recommendation also has relevance to several actions identified in the Johannesburg Plan of Implementation as means of implementation, such as encouraging networking with and between centres of scientific excellence in developing countries, establishing regular channels between policy makers and the scientific community to request and receive science and technology advice for the implementation of Agenda 21[28] and creating and strengthening networks for science and education for sustainable development.[29]

Table 3

Synergies between the recommendations of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III) and actions called for in the Plan of Implementation of the World Summit on Sustainable Development

Recommendations of UNISPACE III	*Plan of Implementation of the World Summit on Sustainable Development*
(a) Protecting the Earth's environment and managing its resources:[a]	(a) Poverty eradication;
(i) Environmental monitoring strategy;	(b) Changing unsustainable patterns of consumption and production;
(ii) Management of natural resources;	(c) Protecting and managing the natural resource base of economic and social development:
(iii) Integrated Global Observing Strategy;	(i) Water resources;
(iv) Weather and climate forecasting.	(ii) Sustainable fisheries;
	(iii) Management of oceans, coastal environment, marine and coastal ecosystems;
	(iv) Climate change, transboundary air pollution, the hole in the ozone layer;
	(v) Disaster management;
	(vi) Agriculture;
	(vii) Desertification and drought;
	(viii) Mountain ecosystems;
	(ix) Forest management;
	(x) Sustainable mining;
	(d) Sustainable development for Africa;
	(e) Sustainable development of small island developing States;
	(f) Means of implementation.
(b) Using space applications for human security, development and welfare:[b]	(a) Poverty eradication;
(i) Public health;	(b) Protecting and managing the natural resource base of economic and social development:
(ii) Disaster management;	

Recommendations of UNISPACE III	*Plan of Implementation of the World Summit on Sustainable Development*
(iii) Tele-education;	(i) Water resources;
(iv) Knowledge-sharing;	(ii) Sustainable fisheries;
(v) Global navigation satellite systems;	(iii) Disaster management;
(vi) Sustainable development.	(iv) Mountain ecosystems;
	(c) Health and sustainable development;
	(d) Sustainable development in a globalizing world;
	(e) Sustainable development for Africa;
	(f) Sustainable development of small island developing States;
	(g) Means of implementation.
(c) Enhancing education and training opportunities and ensuring public awareness of the importance of space activities:[c]	(a) Poverty eradication;
	(b) Protecting and managing the natural resource base of economic and social development:
(i) Capacity-building;	(i) Water resources;
(ii) Information-sharing and spin-offs from space activities;	(ii) Disaster management;
(iii) Opportunities for children and youth to learn about and participate in space activities.	(iii) Mountain ecosystems;
	(c) Sustainable development for Africa;
	(d) Means of implementation.
(d) Strengthening and repositioning of space activities in the United Nations system.[d]	Means of implementation.

[a] As reflected in paragraph 1 (a) of the Vienna Declaration as contained in *Report of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space, Vienna, 19-30 July 1999* (United Nations publication, Sales No. E.00.I.3), chap. I, resolution 1.

[b] As reflected in paragraph 1 (b) of the Vienna Declaration as contained in *Report of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space, Vienna, 19-30 July 1999* (United Nations publication, Sales No. E.00.I.3), chap. I, resolution 1.

[c] As reflected in paragraph 1 (d) of the Vienna Declaration as contained in *Report of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space, Vienna, 19-30 July 1999* (United Nations publication, Sales No. E.00.I.3), chap. I, resolution 1.

[d] As reflected in paragraph 1 (e) of the Vienna Declaration as contained in *Report of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space, Vienna, 19-30 July 1999* (United Nations publication, Sales No. E.00.I.3), chap. I, resolution 1.

148. The recommendations contained in the Vienna Declaration, in particular those relating to the protection and management of the Earth's environment and its resources, have direct relevance to many of the actions recommended in the Johannesburg Plan of Implementation: for example, the recommendations of UNISPACE III to develop a comprehensive, worldwide, environmental monitoring strategy for long-term global observations by building on existing space and ground capabilities (recommendation 1) and to improve the management of the Earth's natural resources by increasing and facilitating the research and operational use of remote sensing data (recommendation 2) support a number of actions called for in the Johannesburg Plan of Implementation to monitor the quality and quantity of water resources and to enhance their use and management. Remote-sensing and satellite technologies were recognized by the World Summit as a means of improving water resource management and scientific understanding of the water cycle. Other actions called for in the Johannesburg Plan of Implementation that have relevance to those two recommendations of UNISPACE III relate to, inter alia, the management of oceans and the coastal environment, as well as marine and coastal ecosystems, desertification and drought, forest management and climate change. The recommendation of UNISPACE III to improve the management of the Earth's natural resources also supports a number of actions in the area of poverty eradication called for in the Johannesburg Plan of Implementation, such as those to develop national programmes that should enable those living in poverty to have increased access to productive resources, in particular land and water.[30]

149. In the area of climate change, for example, the recommendation of UNISPACE III to develop and implement the IGOS (recommendation 3) has direct relevance to the action called for in the Johannesburg Plan of Implementation to strengthen cooperation and coordination among global observing systems and research programmes for integrated global observations (para. 132 (a)). The UNISPACE III recommendation to enhance weather and climate forecasting through international cooperation in the field of meteorological satellite applications (recommendation 4) also has relevance to many actions in the Johannesburg Plan of Implementation in the areas of water resource management, disaster management and climate change.

150. A set of recommendations of UNISPACE III relating to the use of space applications for human security, development and welfare, as contained in paragraph 1 (b) of the Vienna Declaration, supports many actions called for in the Johannesburg Plan of Implementation in the areas of poverty eradication, health and protection and management of the natural resource base of economic and social development. The recommendation of UNISPACE III to improve public health services by expanding and coordinating space-based services for telemedicine and for controlling infectious diseases (recommendation 6) supports several actions called for in the Johannesburg Plan of Implementation in the areas of health and sustainable economic and social development. Space-based services for telemedicine would support actions not only to promote equitable and improved access to affordable and efficient health-care services (para. 54 (b)), but also to promote and develop partnerships to enhance health education, to achieve improved health literacy on a global basis by 2010 (para. 54 (c)). In addition to the use of telemedicine and tele-health, the use of remote sensing and GIS could support the fight against and control of communicable diseases, such as Ebola, and non-communicable diseases (para. 64 (b) and (c)).

151. An integrated, multi-hazard, inclusive approach to address vulnerability, risk assessment and disaster management, including prevention, mitigation, preparedness, response and recovery, was identified by the World Summit as an essential element of a safer world in the twenty-first century (para. 37). Many of the actions that were considered necessary by the World Summit in that regard would greatly benefit from the implementation of an integrated, global system to manage natural disaster mitigation, relief and prevention efforts through Earth observation, communications and other space-based services, making maximum use of existing capabilities and filling gaps in worldwide satellite coverage, a recommendation of UNISPACE III (recommendation 7). The combined use of Earth observation, communications and positioning satellites would support all phases of disaster management.

152. Applications of communications satellites would enhance not only access to health services but also to education and training opportunities, in particular, in rural and remote areas. They would play an important role in bridging the digital divide. The recommendations of UNISPACE III to promote literacy and enhance rural education by improving and coordinating educational programmes and satellite-related infrastructure (recommendation 8) and to improve knowledge-sharing by giving more importance to the promotion of universal access to space-based communication services (recommendation 9) concern applications of communications satellites and support many actions called for in the Johannesburg Plan of Implementation to ensure that children everywhere will have equal access to all levels of education (para. 7 (g)). The implementation of the recommendation of UNISPACE III to improve knowledge-sharing would support sustainable development in a globalizing world. For example, it is directly linked with the action called for in the Plan (para. 52) to assist developing countries and countries with economies in transition in narrowing the digital divide and harnessing the potential of information and communication technologies for development, which would support the World Summit on the Information Society (see paras. 158-164).

153. The use and applications of GNSS support sustainable development not only through enhancing safety of transportation, but also through many other areas, such as the management of environment and disasters, search and rescue, management of natural resources, agriculture, mapping, surveying and Earth sciences. In that regard, the implementation of the recommendation of UNISPACE III to promote the enhancement of, universal access to and compatibility of space-based navigation and positioning systems (recommendation 10) would help undertake many of the actions called for in the Johannesburg Plan of Implementation, in particular those to protect and manage the natural resource base of economic and social development and some of the actions to eradicate poverty.

154. Capacity-building is a fundamental element of sustainable development. Throughout the Johannesburg Plan of Implementation, the World Summit on Sustainable Development called for a number of actions in various areas to strengthen institutional capacity and enhance education and training opportunities. UNISPACE III placed emphasis on the importance of capacity-building in the use of space science and technology and their applications, in particular in developing countries. The action called for in the Vienna Declaration, in particular to enhance capacity-building through the development of human and budgetary resources, the training and professional development of teachers, the exchange of teaching

methods, materials and experience and the development of infrastructure and policy regulations (recommendation 17), has direct relevance to a number of actions identified in the Plan as means of implementation. The use of remote sensing and satellite technologies and satellite data is also specifically mentioned in the Plan in the areas of water resources management and disaster management (paras. 28 and 37 (c)).

155. Providing equal access to education was identified by the World Summit on Sustainable Development as a means to achieve poverty eradication. In that regard, some of the actions called for in the Plan to eradicate poverty are related to the recommendation of UNISPACE III to enhance capacity-building, mentioned above in paragraph 25, as well as the recommendation to encourage all States to provide their children and youth, especially females, through appropriate education programmes, with opportunities to learn more about space science and technology and their importance to human development (recommendation 21).

156. The Johannesburg Plan of Implementation contains sets of recommendations aimed at sustainable development of small island developing States and sustainable development for Africa. Many of the recommendations of UNISPACE III concerning specific application fields and cross-cutting areas could support many of the actions recommended in the Johannesburg Plan of Implementation to enhance sustainable development of Africa, in particular recommendations relating to environmental monitoring strategy, management of natural resources and capacity-building (recommendations 1, 2 and 17 of UNISPACE III). Those recommendations relating to the management of natural resources, climate and weather forecasting, public health and disaster management (recommendations 2, 4, 6 and 7) are related to some of the actions recommended in the Plan for sustainable development of small island developing States.

157. The Johannesburg Plan of Implementation contains actions to promote sustainable development in a globalizing world (paras. 47-52). The intrinsic nature of space-based systems as a global system contributed to some extent to the globalization of the world, presenting both challenges and opportunities. The strategy presented in the Vienna Declaration is a blueprint for turning the challenges of globalization, in particular for developing countries, into opportunities to accelerate development, reducing the risk of marginalization and vulnerability in a changing world in terms of environmental conditions, pace of commerce and trade, flow of goods and people or the implications of economies and policies beyond national borders.

C. Synergies with the Plan of Action of the World Summit on the Information Society

158. Increased connectivity among countries, communities and individuals around the world is one of the aspects of the globalization of the world to which space technology and its applications has contributed significantly. Communication and broadcasting satellites play an important role, particularly in disseminating large amounts of images, data and information from a single point to multiple points around the world. They could also play a significant role in ultimately bridging the digital divide.

159. Some of the recommendations of UNISPACE III aim in particular at facilitating and expanding the use of satellite communications. Their implementation would contribute to carrying out the Plan of Action adopted at the first phase of the World Summit on the Information Society, especially to enhance information and communication infrastructure and access to information and knowledge. Synergies between the recommendations of UNISPACE III and actions called for in the Plan of Action of the World Summit on the Information Society are summarized in table 4 below.

Table 4
Synergies between the recommendations of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III) and actions called for in the Plan of Action of the World Summit on the Information Society

Recommendations of UNISPACE III	*Plan of Action of the World Summit on the Information Society*
(a) Protecting the Earth's environment and managing its resources:[a]	(a) Electronic environment (e-environment);
(i) Environmental monitoring strategy;	(b) E-agriculture.
(ii) Management of natural resources.	
(b) Using space applications for human security, development and welfare:[b]	(a) Information and communication infrastructure;
(i) Public health;	(b) E-health;
(ii) Disaster management;	(c) E-environment;
(iii) Tele-education;	(d) E-agriculture;
(iv) Knowledge-sharing;	(e) E-science;
(v) Sustainable development.	(f) Access to information and knowledge;
	(g) Capacity-building;
	(h) Role of Governments and all stakeholders in the promotion of information and communication technologies for development.

Recommendations of UNISPACE III	*Plan of Action of the World Summit on the Information Society*
(c) Enhancing education and training opportunities and ensuring public awareness of the importance of space activities:[c] Capacity-building.	(a) Information and communication infrastructure; (b) E-health; (c) E-science; (d) Capacity-building; (e) Role of Governments and all stakeholders in the promotion of information and communication technologies for development; (f) Media; (g) Digital solidarity agenda.
(d) Strengthening and repositioning of space activities in the United Nations system:[d] Promotion of the peaceful uses of outer space with all States, international organizations and civil society, including industry.	(a) Role of Governments and all stakeholders in the promotion of information and communication technologies for development; (b) International and regional cooperation.

[a] As reflected in paragraph 1 (a) of the Vienna Declaration as contained in *Report of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space, Vienna, 19-30 July 1999* (United Nations publication, Sales No. E.00.I.3), chap. I, resolution 1.

[b] As reflected in paragraph 1 (b) of the Vienna Declaration as contained in *Report of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space, Vienna, 19-30 July 1999* (United Nations publication, Sales No. E.00.I.3), chap. I, resolution 1.

[c] As reflected in paragraph 1 (d) of the Vienna Declaration as contained in *Report of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space, Vienna, 19-30 July 1999* (United Nations publication, Sales No. E.00.I.3), chap. I, resolution 1.

[d] As reflected in paragraph 1 (e) of the Vienna Declaration as contained in *Report of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space, Vienna, 19-30 July 1999* (United Nations publication, Sales No. E.00.I.3), chap. I, resolution 1.

160. The implementation of the recommendations of UNISPACE III to develop a comprehensive, worldwide environmental monitoring strategy (recommendation 1) and to improve the management of the Earth's natural resources (recommendation 2) would involve the use of satellites to facilitate access to and disseminate information. Those recommendations have close relevance to the action called for in the Plan of Action of the World Summit to use and promote information and communication technologies as an instrument for environmental protection and the sustainable use of natural resources as well as to ensure the systematic dissemination of information using information and communication technologies on agriculture, fisheries, forestry and food (paras. 20 (a) and 21 (a)).

161. Some of the actions called for in the Plan of Action of the World Summit to implement electronic strategies (e-strategies), such as in e-environment, e-agriculture, e-health and e-science, would benefit from the use of communications

satellites specifically promoted or implied in the recommendations of UNISPACE III for using space applications for human security, development and welfare, as contained in paragraph 1 (b) of the Vienna Declaration. In particular, the recommendation to improve public health services by expanding and coordinating space-based services for telemedicine has direct relevance to the action called for in the Plan of Action to encourage the adoption of information and communication technologies to improve and extend health-care and health-information systems to remote and underserved areas (recommendation 6, para. 18 (c)). In the area of e-health, the Plan also calls for action to strengthen and expand information and communication technology-based initiatives for providing medical and humanitarian assistance in disasters and emergencies (para. 18 (f)). This action is also related to the recommendation of UNISPACE III to implement an integrated, global system to manage natural disaster mitigation, relief and prevention efforts (recommendation 7).

162. Tele-education is another area where there is synergy between the recommendations of UNISPACE III and those of the World Summit on the Information Society. In the efforts to enhance information and communication infrastructure, the World Summit, in its Plan of Action, called for an action to provide and improve information and communication technology connectivity for all schools and universities and other institutions accessible to the public (para. 9 (c)). In the Vienna Declaration, UNISPACE III recommended an action to promote literacy and enhance rural education by improving and coordinating educational programmes and satellite-related infrastructure (recommendation 8).

163. The recommendation of UNISPACE III to improve knowledge-sharing by giving more importance to the promotion of universal access to space-based communication services and by devising efficient policies, infrastructure, standards and applications in development projects (recommendation 9) has close links with a number of actions included in the Plan of Action of the World Summit. The implementation of that recommendation, for example, would support the actions called for by the World Summit to devise appropriate universal access policies and strategies, and their means of implementation, as well as to develop and strengthen broadband network infrastructure, including delivery by satellite and other systems, to help in providing the capacity to match the needs of countries and their citizens and for the delivery of new information and communication technology-based services.

164. A number of actions called for in the Plan of Action in the area of capacity-building relate to the use of communications satellites as a tool to enhance education and training opportunities, in particular in rural and remote areas. Some of those actions relate to strengthening the capacity of countries to develop e-strategies, which would include the integration of satellite communications into the information and communication infrastructure. The implementation of the recommendation of UNISPACE III to enhance capacity-building in space science and technology and their applications (recommendation 17) could support the efforts to undertake many of the actions called for by the World Summit.

D. Synergies with other global initiatives

165. The implementation of the recommendations of UNISPACE III could contribute to many global initiatives that are undertaken after UNISPACE III outside the United Nations system with the aim of supporting social, economic and cultural development. One example is GMES: approved by the Ministerial Council of the Agency in November 2001, the Earthwatch GMES Services Element (GSE) is expected to deliver policy-relevant services to end-users primarily, though not exclusively, from Earth observation sources and to enable end-users to become key players in the move from the present generation of Earth observation satellites to future European systems that would deliver vital information on global environment and security. There are currently 10 GSE services covering such applications as urban mapping, water management, forest fire and flood management, crop monitoring, ocean surveillance and ice monitoring. The focus areas of GSE include making GMES global. The activities associated with GMES contribute to the implementation of recommendations of UNISPACE III, in particular in the areas of environmental monitoring, management of natural resources and disaster management (recommendations 1, 2 and 7).

166. Following the agreement of the leaders of partners of the Group of Eight in Evian, France, in June 2003, to the Cooperative Action on Science and Technology for Sustainable Development, the Earth Observation Summit was held in Washington, D.C., in July 2003. The Earth Observation Summit launched an initiative to build a comprehensive, coordinated and sustained Earth observation network of systems and established an intergovernmental ad hoc Group on Earth Observations, consisting of more than 30 countries and 20 international entities. This is another example of a global initiative that has relevance to the recommendations of UNISPACE III. The Group on Earth Observations aims to develop, by early 2005, a 10-year implementation plan for building such a system, taking into account the findings and recommendations of its five subgroups on architecture, data utilization, user requirements and outreach, capacity-building and international cooperation. Follow-up actions to be undertaken as part of the implementation of recommendations of UNISPACE III, in particular in the areas of environmental monitoring strategy, management of natural resources, integrated global observing strategy, weather and climate forecasting, public health, disaster management, sustainable development, capacity-building and increasing awareness (recommendations 1-4, 6, 7, 11, 17 and 18), could complement and create synergies with the efforts to develop and operate such an Earth observation network of systems.

V. Assessment of the process of implementation of the recommendations of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III)

167. The successful implementation of any recommendation that involves Governments requires a commitment by policy makers in terms of the level of priority to be assigned and the allocation of financial and human resources.

168. As a result of a limited awareness of space benefits for society at large, space activities have not been assigned a high priority in many States, resulting in limited resources being allocated to support space activities. In spite of this, much has been accomplished and progress has been made through the work on increasing awareness done by the Committee on the Peaceful Uses of Outer Space, including its action teams.

169. In order for government agencies, research institutions and non-governmental entities to receive broad support from policy makers and the general public for their activities, objectives must be clearly defined, realistic and linked to the priorities of society at large and the benefits to be derived, including short-term benefits, must be well articulated. That is essential for the successful implementation of the recommendations and should be done at an early stage to ensure that the necessary resources are obtained.

A. Elements that have contributed to the progress made in the implementation of the recommendations of UNISPACE III

170. The following elements were important in the initial phase of the implementation of recommendations of UNISPACE III: prioritization of work; flexibility in conducting work throughout the year; maximizing opportunities to meet and communicate; coordination and distribution of work; and strong leadership and secretariat support. For details concerning implementation of the recommendations of UNISPACE III, see annexes II, III and V to the present report.

171. The identification of priority areas and establishment of action teams to implement the recommendations of UNISPACE III (see paras. 29-30) was an important element for success. The Committee and its action teams benefited from active participation and substantive contributions by various entities of the United Nations system, in particular when the priority areas coincided with the priorities of those entities, such as in disaster reduction and emergency response to disasters.

172. A good coordination mechanism was also important. Coordination at all levels among the action teams, as well as between the Committee, the action teams and the Scientific and Technical Subcommittee at their annual sessions, was a key factor for obtaining good results.

173. Intersessional work also proved useful and was especially successful when there was strong secretariat support, whether provided by Governments or by the Office for Outer Space Affairs, and good distribution of work among the members involved.

174. The action teams provided a flexible and dynamic mechanism for conducting work throughout the year by maximizing opportunities to meet and communicate. This mechanism sustained progress while ensuring that the Committee and its Scientific and Technical Subcommittee continued to assume the primary responsibility for implementing the recommendations of UNISPACE III by providing guidance to the action teams. The implementation of the priority recommendations through the action teams also led to the development of international action-oriented networks to address the use of space applications as a tool to solve global problems.

B. Identification of challenges faced in the implementation of the recommendations of UNISPACE III

175. On the basis of the results of a survey conducted among the action teams, the Committee identified limited awareness of the benefits of space activities among policy makers and the general public, limited financial resources and the limited number of experts on space matters as challenges faced in the implementation of the recommendations of UNISPACE III; the limitations are interlinked. Some of the action teams indicated that these impediments were also linked to difficulties in calculating the cost-benefit advantages of space applications. The plan of action contained in chapter VI addresses these challenges.

176. While participation in the work of the action teams was open-ended, allowing any interested State or organization to participate at any point, and while many States had expressed an interest in participating in the implementation of the recommendations of UNISPACE III, various combinations of the impediments mentioned above constituted major obstacles.

177. Where space-related activities are carried out by multiple government entities, participation in the work at the international level, such as in the action teams, is often difficult if effective coordination mechanisms at the national level are not fully established or fully utilized. Without such coordination mechanisms, it could also be difficult to identify a focal point to respond in a timely manner to a request or invitation from an international body for action in space-related areas.

178. While the engagement of non-governmental entities in the process of implementing the recommendations of UNISPACE III was considered important, engaging the private sector by identifying appropriate and meaningful ways and means for it to work with Governments and international organizations as partners has turned out to be a challenge.

C. Recommendations of UNISPACE III that remain to be addressed

179. Among the 33 recommendations of the Vienna Declaration, 12 were identified for implementation by the action teams. As part of their agenda items, the Committee on the Peaceful Uses of Outer Space and its subcommittees are implementing 11 more recommendations. In addition to those 23 recommendations, five other recommendations are being implemented by the Office for Outer Space Affairs or by other international entities. Of the remaining five recommendations, one recommendation calls for action to promote further the peaceful uses of outer space through cooperation between "space-faring" and "non-space-faring" countries, as well as among developing countries, and through the involvement of civil society. This is already being undertaken through a large number of follow-up activities of UNISPACE III. There are therefore four recommendations that remain to be addressed. Those recommendations call for actions (a) to ensure, to the extent possible, that all space activities, in particular those which may have harmful effects on the local and global environment, are carried out in a manner that limits such effects (recommendation 5); (b) to establish or strengthen national mechanisms to coordinate the appropriate development of space activities and foster the participation of all the sectors concerned (recommendation 19); (c) to consider

creating awards to recognize outstanding contributions in space activity, in particular for youth (recommendation 23); and (d) to consider, to the extent feasible, the recommendations of the regional preparatory conferences for UNISPACE III[31] in appropriate forums (recommendation 30).[32]

180. A survey is expected to be conducted among Member States following the review by the General Assembly at its fifty-ninth session of the implementation of the recommendations of UNISPACE III in order to assess the level of priority given by Member States to the four recommendations yet to be addressed.

D. Emerging issues following UNISPACE III

181. While UNISPACE III addressed a broad range of thematic areas where space science and technology and their applications could contribute to enhancing the human living conditions, there are a few issues that have emerged following UNISPACE III. These are described below.

1. Using space technology to support humanitarian assistance

182. One of the issues to emerge relates to the use of space technology and its applications in refugee operations. Satellite products are increasingly used in the management of humanitarian and refugee situations around the world, such as to analyse environmental degradation, to assess the extent of destruction of housing and to assist reconstruction activities.

183. With the arrival of a new generation of satellite imagery at very high resolution, satellite products have become an integral part of the humanitarian response to an international crisis. This is an area where the use of space technologies could significantly contribute to supporting entities of the United Nations system in their operational activities to improve conditions for displaced populations.

2. Meeting development goals and time-bound targets

184. The United Nations Millennium Summit identified global poverty as the most daunting of all the problems facing the world. The United Nations Millennium Declaration adopted by the Summit identified eight development goals and a set of time-bound targets in the fight against poverty, illiteracy, hunger, lack of education, gender inequality, child and maternal mortality, disease and environmental degradation.

185. The major United Nations conferences and summits that were convened following the Millennium Summit in the economic, social and related fields[33] offered opportunities to review the progress made in implementing the Millennium Declaration and to articulate further actions that would be necessary to achieve the internationally agreed development goals, including those contained in the Millennium Declaration.

186. There has been a convergence of effort towards integrated and coordinated implementation of and follow-up to the outcomes of the major United Nations conferences and summits in the economic and social fields. In its resolution 58/291 of 6 May 2004, the General Assembly decided to review in 2005 the progress

achieved in implementing all the commitments contained in the Millennium Declaration. It is expected that efforts of bodies to follow up on United Nations conferences and summits would be taken into account in the political process leading to the meeting in 2005.

187. In its report entitled "Inventing a Better Future: A Strategy for Building Worldwide Capacities in Science and Technology",[34] the InterAcademy Council[35] identified science and technology as the engine that drives knowledge-based development, which is essential for social and economic inclusion, achieving equity and enhancing participation in social and economic development. Space science and technology is an extremely powerful tool that should be used to achieve some of the goals set by the world summits.

188. In fighting poverty, the United Nations has increased its efforts to involve the private sector in developing countries. An initiative of the United Nations Development Programme launched by the Secretary-General in July 2003, the Commission on the Private Sector and Development was established to develop strategic recommendations on how to promote strong domestic private sectors in the developing world as a key strategy towards achieving the targets set at the United Nations Millennium Summit to halve extreme poverty, halt the spread of HIV/AIDS and provide universal primary education by 2015.

189. In its report to the Secretary-General entitled *Unleashing Entrepreneurship: Making Business Work for the Poor*,[36] the Commission on the Private Sector and Development offered recommendations on how the major actors –Governments, public development institutions, the private sector and civil society organizations— could modify their actions and approaches to significantly enhance the ability of the private sector to advance the development process. Among other things, in the public-private sphere, the Commission called for action to facilitate access to broader financing options, assist skill and knowledge development and make possible the sustainable delivery of basic services, especially energy and water.

3. Establishing an operational, comprehensive system for Earth observation through global initiatives

190. Increasingly efforts have been made, in particular by space agencies and satellite operators, to maximize and share the benefits of the existing and planned satellite missions and products, with more focus on meeting societal needs and the requirements of end-users, including those in developing countries. CEOS is one such example (see paras. 124 and 128). The participation of CEOS in the IGOS-P has also served to enhance the dialogue between satellite operators and the global in situ observing systems for which FAO, the International Oceanographic Commission of UNESCO and WMO are responsible. IGOS-P provides the entities of the United Nations system with an opportunity to indicate their specific needs for satellite products and express their views, in particular in terms of the requirements of members of the scientific community involved in Earth observation.

191. The GMES initiative and the Earth Observation Summit, which resulted in the establishment of the ad hoc Group on Earth Observations (see paras. 165-166), aim to serve larger communities of end-users in a wide range of human activities that benefit from Earth observations. The idea of creating an international system for Earth observations had been proposed at space-related international meetings prior

to UNISPACE III.[37] The scope of the consultative process adopted by the GMES initiative and the ad hoc Group on Earth Observations in terms of the number of participating States and organizations, the level of participation and the frequency of consultative meetings, is, however, unprecedented. The process adopted by the ad hoc Group on Earth Observations, for example, involves many developing countries, as well as a large number of intergovernmental organizations, including entities of the United Nations system, in defining a global Earth observation system of systems that would meet the information needs of global, regional and local research and applications programmes aimed at providing societal benefits called for, for instance, in the United Nations Millennium Declaration and at the World Summit on Sustainable Development, while placing emphasis on capacity-building of developing countries.

192. These initiatives could lead to a globally coordinated and financially sustained mechanism to address user requirements for Earth observations worldwide and across all application areas in a comprehensive manner. This would also increase benefits from Earth observations for developing countries in a wide range of activities. A challenge for the entities of the United Nations system, with limited resources, as well as for developing countries, is to participate meaningfully in and contribute to the emerging high-level coordination initiatives in a significant manner. Each participating entity needs to identify the optimal level of participation in the coordination bodies of similar initiatives without creating adverse impacts on the delivery of their ongoing programmes and outputs.

4. The International Charter "Space and Major Disasters"

193. The International Charter "Space and Major Disasters" was announced by ESA and CNES during UNISPACE III and subsequently signed by those agencies in June 2000 and by the Canadian Space Agency (CSA) in October 2000. The International Charter, operational since November 2000, aims at providing, through authorized users, a unified system of space data acquisition and delivery to those affected by disasters. Through the Charter, satellites of the present Charter members, ESA, CNES, CSA, the Indian Space Research Organisation, the National Oceanic and Atmospheric Administration of the United States and the National Commission on Space Activities of Argentina, can be used to provide Earth observation images to civil protection authorities responding to a major disaster. In addition, the Japan Aerospace Exploration Agency applied to join the Charter in September 2003 and is participating in Charter activities as an observer.

194. As at 1 June 2004, the Charter had been activated 55 times in response to earthquakes, floods, forest fires, hurricanes, landslides, oil spills, train explosions and volcano eruptions in more than 30 countries around the world. The experience with the Charter so far indicates that it serves as an effective mechanism of response to requests by countries affected by disasters. Its effectiveness would be increased if more countries with space agencies having remote sensing satellite capabilities were to join the Charter. Those countries are, therefore, encouraged to further strengthen the Charter.

5. The growing impact of globalization

195. Over the past decade, the world has experienced the major phenomena of globalization and rapid technological advances. It is now possible to exchange

information and act much faster on a global scale and to mobilize resources for much larger profits. There are, however, also challenges associated with globalization. In a global world, anything that happens on the planet could affect the entire international community.

196. Space technology should be considered a tool to capitalize on the opportunities that globalization offers for economic and social development in a sustainable manner. Space applications, particularly through Earth observations, can provide effective tools for cooperation and coordination of policy at the global level to protect the environment. Satellite communications have significant potential to bridge the digital divide by contributing to the development and strengthening of the information and communication infrastructure as an essential foundation for a knowledge-based society.

E. Inter-agency coordination bodies dealing with space-related matters

197. Coordination among the entities of the United Nations system is achieved through the work of the United Nations System Chief Executives Board for Coordination. While the Inter-Agency Meeting on Outer Space Activities is not part of the machinery of the Board, the Meeting serves as the focal point for inter-agency coordination in space-related activities and reports to the Committee on the Peaceful Uses of Outer Space.

198. In recent years, new inter-agency coordination bodies that have direct or indirect relevance to space-related activities have started to emerge; one such body is the United Nations Geographic Information Working Group. The Working Group seeks to identify and implement protocols for sharing, maintaining and assuring the quality of geographic information within the United Nations system and to develop and maintain a common geographic database as a crucial capacity-building effort to enhance normative, programme and operational capabilities and efficiencies within the United Nations system (see also para. 118). The Task Group on Remote Sensing of the Working Group, for example, is working towards providing a single point of entry for shareable satellite imagery held by individual United Nations entities, allowing access by the entire United Nations community, and exploring how all United Nations entities could be included in multi-user licenses for use of satellite imagery.

199. Established by the General Assembly in its resolution 54/219 of 22 December 1999, the Inter-Agency Task Force on Disaster Reduction has been serving since 2002 as the main forum within the United Nations for continued and concerted emphasis on natural disaster reduction, in particular for defining strategies for international cooperation at all levels. The Task Force endeavours to identify gaps in disaster reduction policies and programmes and to recommend remedial action. Currently, the Task Force has four working groups to address the following topics: climate and disasters; early warning; risk, vulnerability and impact assessment; and wild land fires. While the Task Force does not address the use of space technology for disaster reduction as part of its regular work, the secretariat of the Task Force has been working with the Office for Outer Space Affairs to ensure that the use of

space technology will be appropriately taken into account in defining future disaster reduction policies and strategies.

200. In November 2001, the Secretary-General established the United Nations Information and Communications Technologies Task Force pursuant to a request by the Economic and Social Council. The Task Force is intended to provide leadership within the United Nations system by helping to formulate strategies for the development of information and communication technologies and putting those technologies at the service of development. The main areas of the business plan adopted by the Task Force for 2004 include monitoring progress in the application of information and communication technologies for the development goals of the World Summit on the Information Society. Through its five working groups, the Task Force is, for example, supporting the development and applications of information and communication technologies to strengthen health-care systems and infrastructure in developing countries.

201. These inter-agency coordination bodies could serve to articulate the specific needs of various entities of the United Nations system that could be met by space technology and its applications. Interaction between these bodies and space-based systems and service providers could lead to a better use of existing space-based services and products. At the same time, there might be a need to examine ways to enhance coordination between the inter-agency bodies dealing with space-related matters, to ensure that participation in those bodies does not create an additional burden on the United Nations bodies with space-related activities, while keeping the inter-agency bodies well informed of the ongoing and planned space-related programmes and initiatives. The Committee expressed its support for the Space Education Programme of UNESCO as a contribution to the United Nations Decade of Education for Sustainable Development (2005 to 2014) and joint initiatives might be implemented by member States of the Committee and UNESCO on the issue of education and the use of space tools to support sustainable development.

F. Funding and financing implementation of the recommendations of UNISPACE III

1. Prospects for resources to support the implementation of the recommendations of UNISPACE III

202. The size of the worldwide space sector was estimated at about €144 billion (approximately US$ 128 billion) in 2003. This includes the budgets of Governments and space agencies for space-related activities, estimated at about €43.5 billion (approximately US$ 39 billion), as well as the revenues generated by the commercial space applications in the fields of telecommunication, Earth observation and navigation.[38] The revenue for the space industry involved in or associated with infrastructure (space-based and ground-based infrastructure and launch vehicles), satellite services, use of space-based data and assets as well as support services, was estimated to be US$ 97 billion in 2003 and is forecast to grow to over US$ 130 billion by 2008. Many space-faring countries plan to invest in expanding launch facilities, refurbishing ground facilities and developing launch vehicles, as well as in satellites for Earth observations, weather forecasting, communications

and navigation and positioning. Some countries also increased government budgets for civil space activities.[39]

203. The implementation of the recommendations of UNISPACE III could rely heavily on the use of existing infrastructure and other resources and services. With a relatively small amount of resources as compared to the total sum of investment in space infrastructure, applications and services, and allowing for the use of space capacities that are not fully utilized, Governments, space industry and the private sector in general could provide significant support to the implementation of the recommendations of UNISPACE III.

204. To achieve the internationally agreed development goals, it is imperative to involve all stakeholders, including multilateral development institutions and bilateral aid agencies, multinational and local corporations and international private sector association,[40] as well as regional players experienced in development efforts.[41] The combination of all these stakeholders could bring additional resources for the use of space science and technology and their applications to provide solutions called for in the United Nations Millennium Declaration in a cost-effective manner. An example of this is the Disaster Response Initiative, which addresses the independent fund provider's need for increased understanding of grants provided in response to a disaster and provides a set of principles and practical guidelines to assist them in responding to disasters in a more effective and accountable manner.

205. The expertise of the stakeholders identified in paragraph 204 above and others should be considered in preparing pilot projects recommended by the action teams to implement recommendations of UNISPACE III. In assisting developing countries to secure sufficient funding, consideration should be given not only to foreign direct investment but also to policies and strategies that allow the participation of the national private sector. There is a need for, and a benefit to, compiling best practices and lessons learned with regard to the participation of the private sector in pilot projects of operational programmes.

2. Resources to support the United Nations Programme on Space Applications

206. Governments have provided the main sources of funding to implement the recommendations of UNISPACE III through cash or in-kind contributions. Member States support the work of the Office for Outer Space Affairs through voluntary contributions and contributions to the regular budget of the United Nations. Other sources of funding include donations from intergovernmental organizations, international and national non-governmental organizations, private companies and individuals.

207. Regular budget and extrabudgetary resources are the two main sources of funding to support the work of the Office for Outer Space Affairs. The extrabudgetary resources, or voluntary contributions, are allocated to the Office through the Trust Fund for the United Nations Programme on Space Applications, which was established pursuant to General Assembly resolution 37/90 of 10 December 1982 on UNISPACE 82.

208. In addition to support provided by the host countries of the activities of the United Nations Programme on Space Applications (see paras. 212-214 below), in-kind contributions include providing speakers and lecturers to the workshops, training courses, seminars and symposiums organized within the framework of the

Programme. Work conducted on a voluntary basis by members of the action teams established by the Committee on the Peaceful Uses of Outer Space is also considered an essential in-kind contribution.

3. Trust Fund for the United Nations Programme on Space Applications

209. In direct response to a recommendation contained in the Vienna Declaration[42] to establish a special voluntary United Nations fund for the purpose of implementing the recommendations of UNISPACE III, the terms of reference of the existing Trust Fund were revised to include new activities of the Programme to implement those recommendations. As requested by the General Assembly in paragraph 9 of its resolution 54/68 of 6 December 1999, in 2000 the Secretary-General invited Member States to contribute to the Fund and included in his invitation a list of priority project proposals prepared on the basis of recommendations of the Committee on the Peaceful Uses of Outer Space at its forty-fourth session. The following projects and activities were included in the list:

(a) Support for the operational activities of the regional centres for space science and technology education, affiliated to the United Nations, and the Network of Space Science and Technology Education and Research Institutions for Central-Eastern and South-Eastern Europe;

(b) Development of disaster-specific modules and implementation of pilot projects in developing countries to introduce the use of space technologies in disaster management;

(c) Provision of satellite data, hardware and software to user institutions in developing countries to initiate or strengthen pilot projects that use Earth observation data for protecting the environment and management of natural resources;

(d) Development and implementation of a training module on the use of satellite communications for distance education, telemedicine and tele-health applications;

(e) Organization of outreach activities for young people and the general public.

210. The Office for Outer Space Affairs, through the annual report of the Expert on Space Applications,[43] has continued to report to the Committee on the cash and in-kind contributions received in support of the United Nations Programme on Space Applications. In many cases, cash contributions to the Trust Fund for the United Nations Programme on Space Applications are earmarked by donors for specific activities organized within the framework of the Programme. The level of cash contributions varies from year to year, determining the number of workshops, training courses and seminars to be organized, the size of those meetings and the number of projects to be funded with voluntary contributions. Predicting the level of voluntary contributions in any given year makes it difficult to plan activities well in advance. The cash contributions received in the Trust Fund from 2000 to 2003 were as follows:[44]

2000	$113,000
2001	$164,600
2002	$705,000
2003	$93,600

211. Diversifying and increasing the sources of voluntary contributions reduces the burden of relying on a few donors for the organization of many activities. However, diversifying the sources of contributions could also mean an increased amount of administrative work associated with receiving funds, owing to different administrative requirements by different donors in applying for and receiving funds.

4. Support for the activities of the United Nations Programme on Space Applications and the regional centres for space science and technology education, affiliated to the United Nations

212. States that hosted the workshops, training courses, seminars and symposiums of the Programme made cash and in-kind contributions by, among many other things, defraying the cost of all internal operations, for example, room and board for the participants, meeting facilities, local staff, local transportation and organization of social events for the participants. The Government of Austria has hosted the annual symposium since 1994 and the Government of Sweden has hosted the international training course on remote sensing education for educators since 1990, defraying all local expenses involved in the organization of these activities, as well as the international air travel of participants.

213. On average, one third of the cost involved in organizing activities of the United Nations Programme on Space Applications has been covered with resources from the Trust Fund. Another third has been covered by the regular budget of the Office for Outer Space Affairs, and the remainder by the States that hosted activities, including many developing countries.

214. The host countries of the regional centres for space science and technology education have made significant contributions for the establishment and operation of those centres. The regional centres have been established to provide university educators and research and application scientists with education programmes consisting of postgraduate training courses lasting nine months, followed by pilot projects over a one-year period in their respective countries in order to ensure that the participants make full use of the skills and knowledge gained in the training courses. The level of funding provided by the Office is small compared to the total operational cost covered by the host countries, particularly in cases where more than one nine-month training course is organized in a year. In addition to the training courses organized by the regional centres, as indicated below, some centres have also organized short-term workshops.

Regional centre	*Location and year of inauguration*	*Number and subject of nine-month postgraduate courses organized since inauguration*
Regional Centre for Space Science and Technology Education in Asia and the Pacific	India, 1995	Seven courses on remote sensing and geographic information systems (GIS) Four courses on satellite communications Three courses on satellite meteorology and global climate Three courses on space and atmospheric science

Regional centre	*Location and year of inauguration*	*Number and subject of nine-month postgraduate courses organized since inauguration*
African Regional Centre for Space Science and Technology—in English Language	Nigeria, 1998	Two courses on satellite communications
		Two courses on satellite meteorology
African Regional Centre for Space Science and Technology—in French Language	Morocco, 1998	Three courses on remote sensing and GIS
		Two courses on satellite communications
		Two courses on satellite meteorology and global climate
Regional Centre for Space Science and Technology Education in Latin America and the Caribbean	Brazil and Mexico, 2003	One course on remote sensing and GIS

5. Identifying new sources of funding and support

215. Following UNISPACE III, the Committee and its secretariat have continued to place importance on identifying new sources of funding and support in response to a recommendation by UNISPACE III to identify new and innovative sources of funding.

216. At its session in 2000, the Scientific and Technical Subcommittee noted the suggestions by the Office for Outer Space Affairs on possible sources of funding for the regional centres for space science and technology education. The Office suggested that development programmes of Governments and international development financial institutions should support the centres by providing financial aid, experts and equipment. Space agencies, universities and specialized space-related institutions could support the centres by, among other things, defraying the cost of limited amounts of data for education, training and the implementation of pilot projects, providing educational material and sponsoring individual pilot projects that would be part of the education programme of the centres. Industry could also consider donating hardware and software for education and the implementation of pilot projects and entering into mutually beneficial partnerships.

217. In 2002 and 2003, the Scientific and Technical Subcommittee considered the mobilization of financial resources to develop capacity in space science and technology applications. The Subcommittee concluded that mobilization of such financial resources could be achieved through, among other things, partnerships between technical agencies, donor countries and organizations, the private sector and users in developing countries involved in sustainable development. The Subcommittee considered it important that the Committee bring the immense potential of space applications to the attention of development banks and other international funding institutions that finance development projects in developing countries. The work conducted by the Subcommittee under the agenda item was complemented by the Action Team on New and Innovative Sources of Funding as

well as by the United Nations/International Astronautical Federation Workshop held in 2001, which examined the operational aspects of pilot projects, including strategies for funding. The summary of the recommendations of the Action Team on New and Innovative Sources of Funding can be found in annex V, appendix XII, to the present report.

218. Developing countries have to be encouraged to benefit from the pilot projects to be initiated under the space applications programme and trust fund. The benefiting countries should also be encouraged to contribute to the funding of the pilot projects.

219. Some organizations having permanent observer status with the Committee have taken new approaches to identifying sources of funding that could support the implementation of the recommendations of UNISPACE III. For example, ESA has adopted a "pilot project" approach, which is to mobilize funding from development aid agencies to support operational pilot projects in the field of space applications. The ESA approach is twofold: first, to provide specialized training, technical advice and fellowships, among other things, then to support the search for the necessary funding, typically from development aid funds, to support the implementation of the project.

220. The ISPRS is establishing the ISPRS Foundation, to administer an extensive and broadly based international programme that would provide grants, training supplies and other forms of scientific assistance to qualified individuals and organizations that are pursuing and/or applying knowledge for advancing the sciences and technologies associated with the disciplines embodied by ISPRS, especially in developing countries.

221. Obtaining adequate funding and financial resources for implementing the recommendations of UNISPACE III continues to be a challenge. The Committee on the Peaceful Uses of Outer Space considers that this issue should be addressed by all Member States and other interested organizations in a serious manner, in order to facilitate further actions planned for the future.

VI. The way ahead

A. Overview

222. A wide range of space applications affects many aspects of daily life throughout the world. In the broadest sense, the capabilities enabled by using space to observe, measure and allow instantaneous communications from one part of the world to another have far-reaching practical implications. Space applications provide invaluable tools that can be used to address many of the global tasks facing the world and to improve human living conditions. These applications can be used in such areas as achieving a sustainable world, protecting the environment, enabling all people to benefit from global communications, better managing and alleviating the effects of natural disasters, enhancing capacity-building in all parts of the world, providing for telemedicine and tele-health in underprivileged regions and providing for regional economic development that would otherwise not be possible.

223. In order to establish whether enhanced space capabilities could significantly contribute to meeting such important goals, the Committee on the Peaceful Uses of Outer Space, in implementing the recommendations of UNISPACE III as set out in the Vienna Declaration, reviewed the development goals adopted by the United Nations Millennium Summit, which was the largest ever gathering of heads of State and Government, the World Summit on Sustainable Development and the World Summit on the Information Society. In addition, many other sources were reviewed to identify potential needs and, where appropriate, those needs have been coordinated and integrated so as to establish the most appropriate enhancements to existing or planned space systems.

224. Over the past five years, important progress has been achieved in turning into reality the possibilities enshrined in the Vienna Declaration, which offered a programme of work for States to work together with entities of the United Nations system, intergovernmental organizations and civil society to meet the basic needs of people, in particular people in developing countries, and to improve the quality of their lives. A number of space-related initiatives and projects have been undertaken by States at the national level or through bilateral or multilateral cooperation at regional or global levels, directly contributing to carrying out actions recommended in the Vienna Declaration. Space agencies and space-related intergovernmental organizations played an important role in leading such initiatives. Their efforts have been strengthened by non-governmental entities, which contributed to expanding the basis of support for such initiatives at the grass-roots level, by networking individuals across borders and motivating them to work together towards achieving the goals set by UNISPACE III.

225. At the international level, the Committee on the Peaceful Uses of Outer Space has coordinated the efforts to implement the recommendations of UNISPACE III. The Committee adopted the innovative mechanism of establishing action teams under the voluntary leadership of Member States to translate priority recommendations into specific actions. The recommendations of the action teams on the way forward are based on a comprehensive, global review of the current status of the activities that relate to the recommendations of UNISPACE III under their responsibility. Many of the actions proposed by the action teams on the recommendations of UNISPACE III address coordinating mechanisms, the resources required, standards that may need to be developed and adopted and the requirements for the further development of existing or planned space systems into systems with an operational global reach and utility.

226. It has been clearly demonstrated that space activities have the capacity to contribute significantly to meeting many important development goals. It has also been clearly demonstrated that the Committee has the capacity, through mechanisms it has developed, to collect and integrate information on various global development needs that can be addressed by space activities. Much has already been accomplished, but much more needs to be done to make the economic and social benefits of space activities more available to a larger part of the population in the developing world. The plan of action set out below proposes significant actions and initiatives that should be undertaken by the international community through relevant international bodies in the coming years.

227. Completing the tasks of identifying all potential needs and implementing and operating the space systems to meet them is beyond the scope of the mandate and

capacity of the Committee. However, the Committee is able to provide a bridge between users and potential providers of space-based development and services by identifying and coordinating the user requirements of Member States and suggesting scientific and technical systems that might meet them. The General Assembly could provide its political endorsement of the validity of such requirements to meet broader global needs established through its various mechanisms. Interested government space agencies could then work alone or with other agencies, user organizations and the private sector to establish and control resources and develop space systems that could subsequently be passed to appropriate service organizations to operate, under suitable arrangements, providing specific services to users either directly or after augmentation by already established terrestrial systems and collecting appropriate revenues for so doing. Finally, users could apply the services to their needs in various applications and pay appropriate fees for the use of such developed space systems, which would provide new global reach, access and support

B. Plan of Action

1. The use of space to support overarching global agendas for sustainable development

228. The United Nations Millennium Summit, followed by United Nations conferences and summits convened in the economic and social fields, set goals and time-bound targets to accelerate the pace of development in the priority areas. These serve as the overarching global agendas. The General Assembly, in its resolutions 57/270 A and B, considered it a priority to advance mechanisms for the integrated and coordinated implementation of and follow-up to the outcomes of those major United Nations conferences and summits. Under the overall guidance of the Secretary-General and the Administrator of the United Nations Development Programme, in his capacity as Chair of the United Nations Development Group, the Millennium Project was set up to help ensure that all developing countries meet the goals contained in the United Nations Millennium Declaration. Supported by 10 task forces to carry out analytical work, the Millennium Project aims to recommend, by 2005, the best strategies for meeting the Millennium Development Goals.

229. Any progress achieved in the implementation of the recommendations of UNISPACE III is also progress towards achieving the internationally agreed development goals. The use of proven space capabilities, such as Earth observation systems, GIS, satellite meteorology, satellite communications and satellite navigation and positioning systems, creates the synergy and convergence of efforts to carry out the recommendations of UNISPACE III, which would strongly support the actions called for by the United Nations Millennium Summit, the World Summit on Sustainable Development and the World Summit on the Information Society.

230. In implementing the recommendations of UNISPACE III, the Committee has created synergy with the follow-up action resulting from the global conferences and summits. Chapter IV of the present report provides details on the correlation between the implementation of specific recommendations of UNISPACE III and action called for by the global conferences and summits. The work of the action

teams listed below provides a solid basis for making further progress in the follow-up to the United Nations Millennium Summit and the World Summit on Sustainable Development.

Action team	*Recommendation of UNISPACE III*	*Summary of findings and recommendations; and final report*	*Web site for supplementary information*
1	Develop a comprehensive, worldwide environmental monitoring strategy	Annex V, appendix I; A/AC.105/C.1/L.275	--
2	Improve the management of the Earth's natural resources	Annex V, appendix II; A/AC.105/L.250	--
11	Promote sustainable development by applying the results of space research	Annex V, appendix VIII; A/AC.105/C.1/L.264 and Corr.1	--
17	Enhance capacity-building by developing human and budgetary resources	Annex V, appendix X; A/AC.105/L.251	www.oosa.unvienna.org/unisp-3/followup/action_team_17

(a) Establishing a closer link with the work of the Commission on Sustainable Development

Findings

231. There should be a closer link between the implementation of the recommendations of UNISPACE III, coordinated by the Committee on the Peaceful Uses of Outer Space, and the work being carried out by the Commission on Sustainable Development, in accordance with the multi-year programme of work covering the period 2004-2017, agreed upon by the Commission at its eleventh session, as indicated below. During the first year in each two-year cycle, the review year, the Commission is to identify obstacles and constraints to implementation. During the second year, the policy year, the Commission is to decide on measures to accelerate implementation and to mobilize action to overcome the obstacles and constraints identified in the review year.

Cycle	*Thematic cluster*	*Cross-cutting issues*
2004/2005	(a) Water (b) Sanitation (c) Human settlements	(a) Poverty eradication (b) Changing unsustainable patterns of consumption and production
2006/2007	(a) Energy for sustainable development (b) Industrial development (c) Air pollution/atmosphere (d) Climate change	(c) Protecting and managing the natural resource base of economic and social development (d) Sustainable development in a globalizing world

Cycle	*Thematic cluster*	*Cross-cutting issues*
2008/2009	(a) Agriculture (b) Rural development (c) Land (d) Drought (e) Desertification (f) Africa	(e) Health and sustainable development (f) Sustainable development of small island developing States (g) Sustainable development for Africa (h) Other regional initiatives (i) Means of implementation
2010/2011[a]	(a) Transport (b) Chemicals (c) Waste management (d) Mining (e) Ten-year framework of programmes on sustainable consumption and production patterns	(j) Institutional framework for sustainable development (k) Gender equality (l) Education
2012/2013[a]	(a) Forests (b) Biodiversity (c) Biotechnology (d) Tourism (e) Mountains	
2014/2015[a]	(a) Oceans and seas (b) Marine resources (c) Small island developing States (d) Disaster management and vulnerability	
2016/2017	Overall appraisal of implementation of Agenda 21,[b] the Programme for the Further Implementation of Agenda 21[c] and the Plan of Implementation of the World Summit on Sustainable Development[d]	

[a] The thematic clusters for cycles 2010/2011, 2012/2013 and 2014/2015 will remain as part of the multi-year programme of work as scheduled unless otherwise agreed by the Commission on Sustainable Development.

[b] *Report of the United Nations Conference on Environment and Development, Rio de Janeiro, 3-14 June 1992* (United Nations publication, Sales No. E.93.I.8 and corrigenda), vol. I: *Resolutions adopted by the Conference*, resolution 1, annex II.

[c] General Assembly resolution S-19/2, annex.

[d] *Report of the World Summit on Sustainable Development, Johannesburg, South Africa, 26 August-4 September 2002* (United Nations publication, Sales No. E.03.II.A.1 and corrigendum), chap. I, resolution 2, annex.

Proposed actions

232. The Committee on the Peaceful Uses of Outer Space should consider synchronizing its work with that of the Commission on Sustainable Development by (a) examining the contribution that could be made by space science and technology and their applications to one or more of the issues selected by the Commission as a thematic cluster; and (b) providing substantive inputs for consideration by the Commission during the policy year. The Committee could develop such substantive inputs for consideration by the Commission on the basis of specific actions proposed by the action teams.

233. Space agencies and other space-related entities should identify actions called for in the Plan of Implementation of the World Summit on Sustainable Development and establish follow-up programmes to be carried out jointly with multilateral and bilateral development programmes and relevant user institutions, in particular in developing countries.

Expected benefits

234. The benefits expected to result from the proposed actions include (a) increased synergy between the work of the Committee and that of the Commission in taking further action to overcome the obstacles and constraints in carrying out the Plan of Implementation of the World Summit on Sustainable Development; and (b) increased contribution to the integrated and coordinated implementation of and follow-up to the outcomes of major United Nations conferences and summits in the economic and social fields.

(b) Applying the results of space research to promote sustainable development

Findings

235. The well-being and the future of all nations are closely tied to space technology, which has become an indispensable and effective tool in addressing and resolving sustainable development issues and meeting many human critical needs, such as human shelter, food, energy, communications, transportation, health, migration, refugee situations, natural disasters and education. The recognition of the importance of space technology has motivated many States, including developing countries, to invest in developing their own space capabilities, needed for attaining their social and economic goals.

236. Capacity-building in the use of space science and technology and their applications is vital to ensure that space activities support development agendas. The development of indigenous capability in space science and technology at all levels and the establishment of networks among national, regional and international institutions are critical for achieving sustainable development and will facilitate and enhance collaborative research opportunities.

Proposed actions

237. In order to participate effectively in and benefit from all the activities described above, each country should consider (a) developing and committing itself to a sustainable development agenda that can benefit from space technology, at a level commensurate with its capability and resources; and (b) undertaking measures

towards the systematic collection, accurate analysis and proper management of space-acquired and in situ data as a starting point towards sustainable development.

238. Member States should take advantage of the capacities of international entities that are active in fields relating to the environment to provide the intellectual leadership needed for building a strong scientific and technical foundation for the discussion of sustainable development issues. Such international entities include the Office for Outer Space Affairs, UNEP, FAO, UNESCO and WMO, as well as non-governmental organizations such as COSPAR, the International Astronautical Federation and ISPRS (see also paras. 299-310).

Expected benefits

239. The benefits expected to result from the proposed actions, in particular for developing countries, include (a) the identification and use of appropriate and affordable space technology to support their sustainable development agendas; (b) the increased availability of comprehensive and reliable data to better support decision-making in achieving sustainable development agendas; and (c) the better use of available capacities of relevant international entities in building a sound scientific and technical foundation, in particular in developing countries, to better address sustainable development issues.

(c) Developing a comprehensive, worldwide environmental monitoring strategy

Findings

240. Various global initiatives on Earth observations indicate that the development of an integrated, comprehensive, sustainable strategy for environmental monitoring is an issue on which the global community is currently focusing. To meet the challenges of managing the environment, the Action Team on the Environmental Monitoring Strategy proposed a multi-year work plan to launch a space-based worldwide strategy for environmental monitoring to ensure sustainable use of ecosystems and to promote regional cooperation on critical environmental issues, while supporting current and future initiatives on Earth observations.

241. The space-based worldwide strategy could gradually evolve into a comprehensive environmental monitoring system, to provide the best, universally acceptable institutional mechanism to ensure continuous, reliable monitoring of the environment (see annex V, appendix I, sects. 4 and 5).

242. Regional cooperation on critical environmental issues could be further promoted by establishing "geo-information centres" with the aim of (a) providing advanced technologies to transform data sets into information and knowledge with particular attention to regional environmental problems; (b) testing the most advanced informational and computational capabilities at regional sites for further improvement; and (c) enhancing knowledge-sharing and capacity-building of national staff.

Proposed actions

243. The Committee on the Peaceful Uses of Outer Space agreed that, with the assistance of the Office for Outer Space Affairs, it should coordinate the implementation of the work plan at the global level. The details of the work plan

can be found in annex V, appendix I, section 4, subparagraph (b). The Committee also agreed that WMO, the Intergovernmental Oceanographic Commission of UNESCO, CEOS and other members of IGOS-P, as well as the entities involved in implementing the GMES initiative and the ad hoc Group on Earth Observations, should be invited to implement the work plan.

244. The Committee noted with appreciation that the institutions of member States that chaired the Action Team, that is, the Islamic Republic of Iran, the Russian Federation and the Syrian Arab Republic, would take further action on a voluntary basis to establish the first geo-information centre. The nature and organizational aspects, including funding, of the first centre would be defined by interested States and international organizations that would participate in the establishment of the centre, while ensuring that its role and functions did not overlap with any existing initiatives or programmes.

Expected benefits

245. The benefits expected to result from the proposed action, in particular for developing countries, include (a) increased availability of adequate, relevant space-related techniques for environmental monitoring; (b) enhanced capacity of national staff in the use of satellite data in environmental monitoring; (c) strengthened partnership between relevant national, regional and international institutions and increased participation of non-governmental organizations and national personnel in environmental monitoring; and (d) enhanced regional cooperation and knowledge-sharing on specific, critical environmental issues.

(d) Improving the management of the Earth's natural resources

Findings

246. As a result, in particular, of the United Nations Millennium Summit and the World Summit on Sustainable Development, recognition has grown of the importance of management of the Earth's natural resources as to any global strategy to alleviate poverty, especially in developing countries. The operational use of Earth observations and GIS can strengthen the role of stakeholders in the management of natural resources in developing countries, through improved planning and policy-making and better availability of information to guide specific action to implement policies and provide support for livelihoods.

Proposed actions

247. All States that are using or planning to use Earth observations on an operational basis in the management of natural resources should articulate, through pilot and demonstration projects, the exact information needs of all stakeholders involved at all levels. To develop the necessary human resources, States should take advantage of existing capacity-building opportunities and the wealth of Earth observation data, interpretation and analysis tools that are available for specialized training (see paras. 299-310).

248. In order to promote and advocate the operational use of Earth observations and its role in managing natural resources, the Committee recommended that, within the framework of its current programme of work, the Office for Outer Space Affairs should (a) maintain and disseminate a compilation of best practices in the use of

Earth observation data in natural resource management, building on the compilation developed by the Action Team on the Management of Natural Resources and additional information to be submitted by members of the Committee; and (b) organize specialized training courses on the operational use of Earth observations, in cooperation with the regional centres for space science and technology education, affiliated to the United Nations (see also paras. 299-310).

Expected benefits

249. The benefits expected to result from the proposed actions include (a) better operational use of Earth observations to meet the precise information needs of all stakeholders involved in the management of natural resources; (b) further development of the human resources necessary for the operational use of Earth observations in the management of natural resources; and (c) sharing of more information with more users on best practices in the use of Earth observations in natural resources management.

2. Developing coordinated, global space capabilities

250. Coordination is a key element for maximizing the benefits of existing space capabilities to meet societal needs in the most effective and efficient manner. In the area of the use of space technology for disaster management a number of initiatives have been launched at the regional and global levels to integrate the use of satellite data in various phases of disaster management and, in particular, during the crisis phase; one such is the International Charter "Space and Major Disasters" (see paras. 100, 125 and 193-194). GNSS are a new global utility with an increasingly positive impact on people's daily lives. There is a growing number of entities that provides GNSS services in such areas as transportation, mapping and surveying, agriculture, power and telecommunications networks, and disaster warning and emergency response.

251. The use of space technologies for disaster management and the applications of GNSS for sustainable development are areas where the existence of a global entity to enhance coordination and information exchange among service providers and end-users would significantly increase societal benefits for populations, in particular in developing countries. Such an entity currently does not exist for either of those areas. Without concerted action, those gaps are not likely to be filled and would significantly hinder the use of existing and planned space capabilities. The following action teams proposed specific measures to be undertaken in that regard.

Action team	*Recommendation of UNISPACE III*	*Summary of findings and recommendations; and final report*	*Web site for supplementary information*
7	Implement an integrated, global system to manage natural disaster mitigation, relief and prevention efforts	Annex V, appendix V; A/AC.105/C.1/L.273	www.oosa.unvienna.org/unisp-3/followup/action_team_07/

Action team	*Recommendation of UNISPACE III*	*Summary of findings and recommendations, and final report*	*Web site for supplementary information*
10	**Improve universal access to and compatibility of space-based navigation and positioning systems**	**Annex V, appendix VII; A/AC.105/C.1/L.274 and Corr.1 and 2**	**forum.itu.int/~gnss**

(a) Maximizing the benefits of existing space capabilities for disaster management

Findings

252. Disasters affect and hinder development in all parts of the world; thus, coordinated international efforts are required to minimize their impact. Timely and up-to-date situational analyses are required through the full cycle of disaster management, linked to geo-social databases and thematic maps.

253. Space technology, such as Earth observations, communications and navigation and geo-positioning systems, can provide the necessary information for disaster management and the means to transmit such information to decision makers in a timely manner. Satellites provide images in a large range of ground resolutions, spectral characteristics and temporal coverage and there are combinations of these parameters that are optimal for specific types of disasters. Equipment, services and availability of satellite transponder capacity for communications also offer diverse options.

254. Considerable investment has already been made worldwide in these technologies. However, the utilization of these assets in support of disaster management continues to lag significantly behind development activity. A considerable gap still exists, and is likely to remain, in all areas of space technology applications (technical, operational, educational and training, organizational and financial) to disaster management on a global basis. Thus, a more global, integrated, coordinated approach is necessary to meet the needs of the disaster management community.

255. At present, there is no coordination entity that can assist disaster management authorities in identifying the space technologies that could be used in the various phases of disasters (that is, prevention, mitigation, early warning, emergency response and rehabilitation) to reduce the impacts of disasters. In its final report, the Action Team on Disaster Management concluded that the establishment of a "disaster management international space coordination organization" (see annex V, appendix V) would fill that gap.

Proposed actions

256. The Committee on the Peaceful Uses of Outer Space agreed that a study should be conducted on the possibility of creating such an international entity to provide for coordination and the means of optimizing the effectiveness of space-based services for use in disaster management by fully utilizing existing and planned space- and ground-based assets and infrastructure and covering all phases of disaster management. The study should (a) define the key functions of a possible disaster management international space coordination entity; (b) describe the benefits that it would provide to the disaster management community; (c) define the

scope and nature of the entity (for example, intergovernmental or non-governmental); and (d) propose an implementation plan that would include details of the estimated cost of the establishment and operation of such an entity and possible sources of funding (that is, voluntary or assessed contributions), as well as the intended use of the funds. The study should also examine the options of providing sustainable resources for applying space technology in support of disaster management and for building the capacity of civil protection authorities to use space technology. The Committee further agreed that the final report submitted by the Action Team on Disaster Management provides the basis for conducting such a study.

257. The Committee agreed that the study should be prepared by an ad hoc expert group, with experts to be provided by interested member States and relevant international organizations, including entities of the United Nations system involved in disaster management. The Committee also agreed that those experts should aim at completing the study in time for consideration by the Committee at its forty-eighth session of whether to proceed with the implementation plan to be proposed in the study. The Committee further agreed that the Office for Outer Space Affairs should coordinate the organization of the work involved in preparing the study and called on member States to provide support for the study through voluntary contributions.

258. The General Assembly should encourage Member States to make cash or in-kind voluntary contributions to the preparation of the study mentioned in paragraphs 256 and 257 above. The Committee agreed that following the forty-seventh session of the Committee, interested member States should communicate to the Office for Outer Space Affairs their intention to make such voluntary contributions, including contributions to the Trust Fund for the United Nations Programme on Space Applications, for the purpose of preparing the study. The Committee urged interested member States to transfer cash contributions before the end of 2004, so that the Office could include such contributions in its cost plan for use of Trust Fund resources in 2005.

259. The Committee agreed that work on the study could commence as soon as sufficient voluntary contributions had been received by the Office for Outer Space Affairs to cover the costs associated with the preparation of the study. The Committee requested the Office to communicate to member States the date of commencement of the work and to provide information on the organization of work, including the list of experts, some of whom may work on a full-time basis at facilities provided by the Office or by an interested entity of the United Nations system.

260. The Committee agreed that, during the forty-second session of the Scientific and Technical Subcommittee, under the agenda item entitled "Space-system-based disaster management support", the Office for Outer Space Affairs should report to the Subcommittee on the status of the preparation of the study, to indicate whether the study could be completed in time for submission to the Committee at its forty-eighth session and the level of voluntary contributions received in that regard. The Office should also submit to the Scientific and Technical Subcommittee, for its review and approval, draft terms of reference for the ad hoc expert group and propose how the study might be reviewed by the Committee and its subsidiary bodies for a decision to be made by the Committee. On the basis of the report by the

Office, the Subcommittee may provide further guidance on the preparation of the study.

261. The Committee agreed that the ad hoc expert group should also develop a case history of the benefits of using space technologies for disaster management and establish a sample product catalogue. In cooperation with the Office for Outer Space Affairs, the ad hoc expert group should also study the possibility of establishing pages, with the use of voluntary contributions, on the web site of the Office for improved access to Earth observation data archives.

262. Governments and international organizations should consider (a) allocating a portion of their disaster-management-related budget or funds to using space technology for disaster management; and (b) identifying single points of contact to focus their internal disaster management efforts and to provide liaison with external efforts with respect to the use of space technology for disaster management.

263. Member States with space agencies having remote sensing satellite capabilities are encouraged to join and strengthen the International Charter "Space and Major Disasters" (see paras. 193-194), so that remote sensing capabilities and applications can be more effectively used in supporting disaster management activities.

Expected benefits

264. The benefits expected to result from the proposed actions include (a) identification of the best mechanism to enhance coordination at the global level among space-based system operators and service providers to better respond to the needs of disaster management and civil protection agencies while increasing the utilization of those systems and services; (b) enhanced sharing of information on the available space-based products that support disaster management and the benefits of using space technologies for disaster management; (c) identification of the best ways to improve Internet-based access to archived Earth observation data for use in disaster management; and (d) increased capacity of developing countries in using space technologies for disaster management.

(b) Maximizing the benefits of the use and applications of global navigation satellite systems to support sustainable development

Findings

265. GNSS have evolved from an early period of limited programmes to a point where a number of systems and their augmentation are under way or planned. In the future, a number of international and national programmes will operate simultaneously and support a broad range of interdisciplinary and international activities. Discussions taking place at the national, regional and international levels have underscored the value of GNSS for a variety of economic and scientific applications. The emergence of new GNSS and regional augmentations has focused attention on the need for the coordination of planned programmes among current and future operators in order to enhance the utility of GNSS services.

266. The general public and governmental and non-governmental experts understand the basic utility of navigation, geo-positioning and timing services offered by GNSS. While current and future GNSS operators are in a competitive mode, collaboration is expected to increase, a process that will serve the user

community better. Outreach efforts must move beyond simple awareness among the general public and experts to providing assistance in the integration of GNSS into the basic infrastructure of countries in the developing world in particular.

Proposed actions

267. GNSS and augmentation providers should establish an international committee on GNSS that would include appropriate international organizations for the purposes of, among other things, (a) optimizing compatibility and interoperability; (b) identifying mechanisms for implementing measures to protect the reliability and integrity of signals at the national, regional and global levels; (c) coordinating modernization activities to meet user needs; (d) developing road maps for the introduction of GNSS services; and (e) providing training opportunities in GNSS, in particular in developing countries (see paras. 299-310). The proposed international committee on GNSS should facilitate the exchange of information among users and providers of GNSS, without prejudice to the roles and functions of GNSS service providers and intergovernmental organizations such as the International Civil Aviation Organization, the International Maritime Organization and ITU.

268. In cooperation with GNSS and augmentation providers, or the international committee on GNSS if established, the Office for Outer Space Affairs should develop and maintain a web site to include information, inter alia, on recent application developments, training opportunities and sources for obtaining assistance in integrating GNSS into national infrastructure and in protecting signal reliability and integrity at the national and regional levels (see paras. 299-310).

Expected benefits

269. The benefits expected to result from the proposed actions include (a) optimized compatibility and interoperability; (b) identification of mechanisms to implement measures to protect the reliability and integrity of GNSS signals; (c) enhanced coordination in GNSS modernization activities to meet user needs; (d) increased training opportunities, in particular in developing countries, in the use of applications of GNSS; (e) enhanced exchange of information among users and providers of GNSS; and (f) easier access to information on GNSS activities, reference material and sources for obtaining technical assistance.

3. The use of space to support specific agendas to meet human development needs at the global level

270. The goals and possibilities enshrined in the Vienna Declaration can be achieved by taking a comprehensive approach and by creating a new mechanism for cooperation and coordination, building on all the efforts and initiatives undertaken by various entities, or by identifying an existing mechanism that already offers the best avenues for cooperation and coordination. Among the recommendations of UNISPACE III, those relating to weather and climate forecasting, public health and NEOs can be best implemented to meet human development needs at the global level by using the existing mechanisms or policy framework for international cooperation. The action teams listed below took a sharply focused approach to identifying those existing mechanisms for further cooperation and coordination.

Action team	*Recommendation of UNISPACE III*	*Summary of findings and recommendations: and final report*
4	Enhance weather and climate forecasting	Annex V, appendix III; A/AC.105/C.1/L.269
6	Improve public health services	Annex V, appendix IV
14	Improve the international coordination of activities related to near-Earth objects	Annex V, appendix IX

(a) Enhancing weather and climate forecasting by expanding international cooperation in meteorological satellite applications

Findings

271. WMO and its partner organizations have made major achievements in the extension of reliable weather and climate forecasting and the assessment of the causes and course of longer-term changes to the Earth's system, while fostering international cooperation in the field of meteorological satellite applications. The Consultative Meetings on High-Level Policy on Satellite Matters, a coordination mechanism within WMO for the discussion of matters of mutual interest between the satellite operators and the WMO user communities, as well as other coordination mechanisms such as the Coordination Group for Meteorological Satellites and CEOS, in which WMO participates to represent the views of a user group, contribute to maximizing the benefits derived from existing and planned satellite products and services, including those of research and development satellites, for WMO user communities.

272. The present space-based observing system is adequate to provide the data, products and services required for present weather and climate forecasting needs and the envisaged future system would respond to the increasing needs to further enhance weather and climate forecasting. However, attention should continue to be paid to the needs of developing countries, in particular to their access to satellite data, products and services and to appropriate education and training programmes, to ensure that they are kept informed of advances in satellite products and services (see paras. 299-310).

Proposed actions

273. Member States should recognize the significant role of weather and climate forecasting in development and provide support, including the necessary financial resources, to implement the WMO Space Programme, initiated by the fourteenth World Meteorological Congress in May 2003. Member States should also support the implementation of the WMO Space Programme Long-term Strategy, which was included in the Sixth WMO Long-term Plan, covering the period 2004-2011, and which aims, among other things (a) to make increasing contributions to the development of the Global Observing System of the World Weather Watch Programme and other associated observing systems of WMO; (b) to provide continuously improved data, products and services from both operational and research and development satellites; and (c) to facilitate and promote their wider

availability and meaningful utilization around the world. Member States should further support those national and international entities that provide space systems that seek to meet the WMO requirements.

Expected benefits

274. The benefits expected to result from the proposed actions include (a) a reduction in losses due to weather-related natural disasters through enhanced accuracy and timeliness of early warning of destructive weather events and more accurate short- and medium-term weather prediction; and (b) more effective decision-making on food production, investment in infrastructure development and management of freshwater resources based on more reliable information resulting from advances in regionally specific, yearly water cycle predictions, annual to biennial El Niño prediction and decade-scale climate predictions, as well as longer-term climate-change monitoring.

(b) Improving medical and public health services through the use of space technologies

Findings

275. Space technology and its applications contribute to enhancing medical services and public health in such areas as telemedicine, epidemiology, control of infectious diseases, dissemination of information on medical practices and continuous education for medical professionals and for the general public. In particular, telemedicine could be of great importance in providing medical expertise to remote locations not connected to the terrestrial network.

Proposed actions

276. The Committee agreed that, within the framework of the United Nations Programme on Space Applications and with voluntary contributions made by interested member States and international organizations, the Office for Outer Space Affairs should, in cooperation with WHO and other relevant United Nations entities and international organizations and with Member States, convene an international conference on telemedicine for experts and government officials, as well as decision makers, including those from ministries responsible for public health.

277. The Committee recommended that WHO should be invited to address the issue of telemedicine at its World Health Assembly.

278. The Committee agreed that, within the framework of the three-year work plan[45] for the agenda item on space-system-based telemedicine, covering the period 2004 to 2006, the Scientific and Technical Subcommittee should, through an enlarged Action Team on Public Health, prepare, preferably before the convening of the conference on telemedicine mentioned above, a report on the status and potential of telemedicine that would (a) examine the range of telemedicine initiatives worldwide; (b) identify the most promising areas for implementation; (c) examine the needs for telemedicine, in particular in developing countries; and (d) make recommendations for decision makers. The study should take into account the results of the discussions of the Subcommittee during the first two years of the work plan and should be prepared in cooperation with WHO and any other relevant

international organizations, for consideration by the Subcommittee at its forty-third session.

279. The Committee agreed that its Scientific and Technical Subcommittee should consider mechanisms to conduct a study on the feasibility of establishing a possible international cardiovascular-disease knowledge-management network or other pilot projects, to serve as a clinical decision support tool for medical authorities to assess, monitor, diagnose, prevent and treat cardiovascular disease and to assist developing countries in combating cardiovascular disease, with a view to completing the study by the forty-eighth session of the Committee. The study should, among other things, identify entities to be involved in establishing the network, describe the benefits for medical authorities, suggest a timetable, provide cost estimates and identify sources of funding.

Expected benefits

280. The benefits expected to result from the proposed actions include (a) focused international efforts in the priority areas for implementing telemedicine projects; (b) needs in telemedicine of developing countries defined in a more comprehensive manner; and (c) a practical and realistic plan for establishing a cardiovascular-disease knowledge-management network.

(c) Promoting cooperation in the study of near-Earth objects as threats to society at large

Findings

281. The threat to life and property posed by NEOs, when averaged over long periods of time, is believed to be comparable to that from more familiar natural hazards such as earthquakes and extreme weather events. The risk is global. A range of scientific areas requires support and coordination in order to improve the evaluation and assessment of risk. Planned, integrated collaboration offers the most cost-effective response for scientific efforts (search, study and planning for mitigation), as well as emergency or civil contingency action.

Proposed actions

282. Under the three-year work plan of the agenda item on NEOs to be considered by the Scientific and Technical Subcommittee from 2005 to 2007, the Committee should lead efforts towards better coordination at the global level of research, detection, search and follow-up observations of NEOs and other relevant activities by identifying action to be taken at the national level or through international cooperation.

283. The International Council for Science should consider, and encourage its member organizations to consider, the recommendations contained in various reports on the subject of NEOs and help plan the necessary multidisciplinary activity.

Expected benefits

284. The benefits expected to result from the proposed actions include enhanced cooperation and coordination at the global level in research, detection, search and follow-up observation of NEOs.

4. Overarching capacity development

285. Increasing awareness, the sharing of knowledge and information, capacity-building and funding are cross-cutting issues that are interlinked. These elements are essential in an area such as space science and technology and their applications, knowledge of which continues to expand at a rapid pace, with increasing potential for benefits for society at large.

286. Many recommendations of UNISPACE III refer directly to or imply the need to increase public awareness of the importance of space activities, enhancing the sharing of knowledge, strengthening capacity, in particular that of developing countries, and increasing funding support for space activities. In particular, the work of the Committee in the areas listed below, including through its action teams, supports and complements its work on the implementation of recommendations of UNISPACE III in other areas. The issue of funding is dealt with in detail in paragraphs 202-221 above.

Action team	*Recommendation of UNISPACE III*	*Summary of findings and recommendations; and final report*	*Web site for supplementary information*
9	Improve knowledge-sharing through the promotion of universal access to space-based communication services	Annex V, appendix VI	www.oosa.unvienna.org/unisp-3/followup/action_team_09 (for replies received in response to the survey circulated to member States)
17	Enhance capacity-building by developing human and budgetary resources	Annex V, appendix X; A/AC.105/L.251	www.oosa.unvienna.org/unisp-3/followup/action_team_17
18	Increase awareness among decision makers and the general public of the importance of space activities	Annex V, appendix XI; A/AC.105/L.252	www.oosa.unvienna.org/unisp-3/followup/action_team_18 (for replies received in response to the questionnaire circulated to member States and organizations having observer status with the Committee)
32	Identify new and innovative sources of financing to support the implementation of the recommendations of UNISPACE III	Annex V, appendix XII; A/AC.105/L.246	--

(a) Increasing awareness of space benefits to improve the economic and social welfare of humanity

Findings

287. The internationally agreed development goals, including those contained in the United Nations Millennium Declaration, and the outcomes of the major United Nations conferences provide a comprehensive basis for action at the national, regional and international levels to achieve the key objectives of poverty eradication, sustained economic growth and sustainable development. They also provide a solid basis for potential outreach activities aimed at increasing awareness among decision makers and the general public of the importance of peaceful space activities for improving the common economic and social welfare of humanity.

288. While the Committee on the Peaceful Uses of Outer Space increased synergy between its work and the follow-up actions undertaken to implement the relevant outcomes of the United Nations global conferences (see paras. 84-92 and chap. IV), much more can be done. In addition to the need to establish a closer link with the work of the Commission on Sustainable Development (see paras. 231-233 above), whose role includes reviewing and monitoring progress in the implementation of Agenda 21[46] and fostering coherence of implementation, initiatives and partnerships,[47] there is a need to examine ways and means of better contributing to the preparations for United Nations global conferences to be held in the future and to the implementation of the outcomes of past conferences.

Proposed actions

289. The Committee on the Peaceful Uses of Outer Space agreed that the agenda of its future sessions should include items to consider its contributions to the work of those entities that are responsible for convening United Nations conferences and/or for implementing their outcomes, in order to bring to their attention the contributions that space science and technology and their applications could make to achieving their objectives, bearing in mind the needs of developing countries. The Committee also agreed that, at its forty-eighth session, its agenda should include an item to consider its contribution to the work to be conducted by the World Summit on the Information Society during its second phase, to be held in Tunis in November 2005.

290. In order to increase the awareness of policy planners and decision makers, involving all sectors at all levels of decision-making, the Committee agreed that ECA, the Economic Commission for Europe, the Economic Commission for Latin America and the Caribbean and the Economic and Social Commission for Western Asia should be invited to consider integrating the use of space science and technology and their applications into their work towards achieving the Millennium Development Goals, taking into account the accomplishments of RESAP of ESCAP.

291. The Committee agreed that international and national space-related organizations, including non-governmental organizations, should promote awareness of the role of space science and technology and their applications in support of achieving the internationally agreed development goals and should be invited to provide the Committee with information on their efforts in that regard.

292. The Committee also agreed that UNESCO should be invited to consider promoting awareness of the human development benefits of space activities as part of its activities as the lead agency for the United Nations Decade of Education for Sustainable Development, during the 10-year period beginning on 1 January 2005 (see General Assembly resolution 57/254), and to inform the Committee, at its forty-eighth session, on the activities planned during the Decade.

293. The Office for Outer Space Affairs, in cooperation with UNESCO, should disseminate, electronically through its home page, information on efforts to increase awareness of the importance of space activities and should continue to update the information, building on the compilation of the results of the internet-based survey conducted by the Action Team on Increasing Awareness among Member States and the organizations having permanent observer status with the Committee.

Expected benefits

294. The benefits expected to result from the proposed actions include (a) increased synergy between the work of the Committee on the Peaceful Uses of Outer Space and that of those entities which are responsible for convening United Nations conferences and/or for implementing their outcomes; (b) increased contributions to the integrated and coordinated implementation of and follow-up to the outcomes of major United Nations conferences and summits in the economic and social fields; and (c) increased awareness of the importance of space activities in contributing to the promotion of sustainable development.

(b) Improving knowledge-sharing by promoting universal access to space-based communication services

Findings

295. Science and technology serves as the engine that drives knowledge-based development, which is essential for social and economic inclusion (see paras. 184-189). In view of the globalization of the economy (see paras. 195-196) and rapid advances in science and technology, it is essential for any State to create and apply new scientific and technological knowledge, in particular to strengthen its economy. The ability to access such knowledge and to use it could determine the State's competitiveness in the global market.

296. In particular in developing countries, there are many areas where access to knowledge and information is hindered, as their geographical isolation often makes it difficult to provide communication services using terrestrial means. Space-based communication becomes the only option for many such communities. However, providing space-based communication services could be a challenge, owing to the fact that large-scale projects are often required because the focus of private service providers is often driven by market forces and to the disparity that exists in the technologies used to provide such services.

Proposed actions

297. In order to ensure that space-based communication services contribute to improving knowledge-sharing and bridging the digital divide, the Committee agreed that its Action Team on Knowledge-sharing could (a) identify existing and planned space-based communication infrastructures committed to universal access;

(b) identify the barriers to the implementation of space-based communication systems; (c) promote the usage of space-based communication systems to assist in improving knowledge-sharing; (d) identify priority areas and target groups for knowledge-sharing; and (e) start developing pilot programmes for implementation in the near future.

Expected benefits

298. The benefits expected to result from the proposed actions are increased international cooperation, through the work of the Committee, in better utilization of space-based communication systems to meet the needs of the target groups identified by the Committee for improving knowledge-sharing.

(c) Enhancing capacity-building in space-related activities

Findings

299. The exchange of experiences and information, as well as coordination of capacity-building efforts, in a systematic manner at the global and regional levels would significantly benefit many States, in particular those without a critical mass of skilled personnel, professionals and trainers or without a solid institutional framework to support the development of human resources in space-related areas. Further action should be taken to achieve a systematic exchange of experiences and information and coordination of capacity-building efforts.

300. The recommendations of the Action Team on Capacity-building provide the basis for such action. It was recommended that further action should be taken (a) to promote the sharing of educational materials and information; (b) to coordinate international activities on capacity-building; (c) to increase assistance to activities of the regional centres for space science and technology education, affiliated to the United Nations; (d) to enhance opportunities for the ongoing exchange of ideas on capacity-building; (e) to facilitate the augmentation of budgetary resources and fellowships; and (f) to prepare and distribute education booklets.

Proposed actions

301. In order to enhance the capacity of developing countries in the development and wider use of Earth observation technologies, including satellite remote sensing and GIS, member States should be encouraged to support the initiatives taken by the Working Group on Education, Training and Capacity-Building of CEOS, with assistance from the Office for Outer Space Affairs, to develop an Earth observation education and training Internet web portal[48] and provide their Earth observation data free of charge or at the lowest possible cost for educational purposes.

302. Member States that have established space agencies could support the activities of the regional centres for space science and technology education, affiliated to the United Nations, including the possible organization of a series of capacity-building activities in the States of their respective regions, by developing a database of experts from space agencies who could assist the regional centres by providing specialized training, as well as making space-related education and training materials available for use by the regional centres.

303. The Office for Outer Space Affairs and UNESCO, in cooperation with the regional centres for space science and technology education, could assist in the international efforts to coordinate capacity-building activities by disseminating, through their web sites, a list of international activities held around the world to strengthen the capacity of developing countries, in particular those organized by developing countries seeking assistance.

304. The Committee agreed that its member States, in cooperation with the Office for Outer Space Affairs, could implement capacity-building activities, focusing particularly on teachers, young professionals and decision makers, in order to support the Space Education Programme of UNESCO as a contribution of the Committee and the Office to the United Nations Decade of Education for Sustainable Development (2005 to 2014).

305. The Committee agreed that the entities of the United Nations system participating in the Inter-Agency Meeting on Outer Space Activities and members of the Committee on the Peaceful Uses of Outer Space could discuss ways and means of coordinating capacity-building activities in space-related areas at the policy level.

306. In order to encourage the participation of youth in space activities as part of capacity-building efforts, the Committee agreed that the Office for Outer Space Affairs and relevant organizations could hold workshops and symposiums on a regular basis with the participation of youth in order to provide opportunities at the regional level for the exchange of experiences in capacity-building efforts.

307. The Committee recommended that space agencies could develop and distribute educational booklets covering the fundamentals of space science that could serve as educational tools for young people in all countries.

308. The Office for Outer Space Affairs should organize a meeting of interested Member States and space agencies to identify parties willing to undertake the actions listed in paragraph 300 and developed in paragraphs 301-307 above.

309. The Committee noted that some of the satellite images that had been kept in the archives over years had become out of date without being utilized. In that regard, the Committee encouraged those countries that have satellite-imaging techniques and possess archives of satellite images to distribute those images, upon request, free of charge or at the lowest possible cost, for use particularly by developing countries as basic material for space research and studies.

Expected benefits

310. The benefits expected to result from the proposed actions include (a) enhanced access by developing countries to training and educational resources to build their capacity in the use of Earth observation technologies; (b) strengthened capacity of the regional centres for space science and technology education, affiliated to the United Nations, to provide education and training for the benefit of developing countries; (c) enhanced coordination at the global level in organizing activities to strengthen the capacity of developing countries; (d) identification of possible ways and means of coordinating capacity-building activities in space-related areas at the policy level; (e) increased opportunities to integrate substantive inputs from youth in capacity-building efforts in space-related areas; and (f) increased availability of educational materials in space science for young people around the world.

(d) Identifying sources of financing to support development activities with space applications

Findings

311. The question of funding should be considered together with the need to enhance regional cooperation, for example by developing and strengthening institutional mechanisms, as well as the need to enhance knowledge-sharing, to increase awareness of policy makers of the human development benefits to be gained from such funding and to strengthen capacity-building. In order to obtain appropriate funding for projects in the use of space technology and its applications, it is important to investigate all kinds of funds that might be available to support the projects. When applying for funds, it is important to be aware of the priorities established by the donors for providing funds and to fulfil any requirements to receive funds. In general for projects concerned with the use of space technologies, it is also important to convince decision makers and users of the cost-effectiveness of space application techniques.

312. In order to obtain funds from aid agencies and development banks, meeting the criteria for funding is essential. In addition, in order to seek support from aid agencies and development banks, space-related projects should be user-driven and application-oriented, to demonstrate that space technologies can offer practical, operational and cost-effective alternatives to conventional tools to solve specific development problems and should be supported by Governments if projects are to be carried out at the national level. Proposals should indicate the conditions for and methods of sustaining the space application aspect on an operational basis after the demonstration phase has been completed, taking into account the needs of developing countries for education and training in all areas of space science and technology.

Proposed actions

313. Development banks and aid agencies are not fully aware of the potential and possibilities offered by space applications. In order to enhance access by developing countries to funding support provided by the development banks and aid agencies to carry out development projects with the use of space technology and its applications, the Committee agreed to implement the following actions through its Action Team on Innovative Sources of Funding:

(a) Organize workshops for experts in development banks and aid agencies to learn about the possibilities offered by space applications;

(b) Identify specific measures to promote the inclusion of training components in projects to be funded and to encourage formal commitment from the Governments concerned to maintain the structures that have been developed and to retain the personnel trained as a result of the project;

(c) Identify ways to promote the inclusion of funds for the necessary investment in a specific budget and the amortization of that investment in subsequent budgets, in order to allow for the reimbursement of the initial investment, and to provide guarantees for foreseeable internal return in the projects in order to ensure their operational nature in the long term.

314. The Committee agreed that States that receive official development assistance funds should (a) consider placing a higher priority on capacity-building initiatives in the fields of space science and technology; and (b) use official development assistance funds to help achieve their capacity-building goals. The countries that provide official development assistance funds should make efforts to build partnerships with countries requesting assistance and directly support their capacity-building through exchanges of information and experience (see also paras. 299-310).

315. As a way of increasing the predictability of voluntary contributions to support the activities of the Office for Outer Space Affairs (see paras. 209-211), the Committee agreed that the overall number of donors contributing to the Trust Fund for the United Nations Programme on Space Applications should increase. Donors were encouraged to contribute to the Trust Fund, while allowing full flexibility for the Office for Outer Space Affairs to carry out activities in accordance with the priorities set by the Committee.

Expected benefits

316. The benefits expected to result from the proposed actions include (a) increased possibility of development banks and aid agencies providing funds to support projects with the use of space applications for development purposes; (b) increased effectiveness of funds provided for projects for development purposes to strengthen local capacity-building; and (c) increased predictability of contributions to the Trust Fund for the United Nations Programme on Space Applications and increased possibility of advance planning leading to an increase in the number of individuals from developing countries to benefit from the activities of the Programme.

C. Strengthening the role of the Committee on the Peaceful Uses of Outer Space, its subcommittees and its secretariat in implementing the recommendations of UNISPACE III

1. Encouraging the participation of members of the Committee on the Peaceful Uses of Outer Space in the work of the Committee and its subcommittees

317. The General Assembly, in its resolution 58/89 of 9 December 2003, requested the Committee to consider ways to improve participation by member States and entities with observer status in its work, with a view to agreeing on specific recommendations in that regard at its forty-eighth session.

318. In order to encourage the participation of developing countries, in particular in its work, the Legal Subcommittee should support the efforts made by the Office for Outer Space Affairs and individual member States to continue to organize and sponsor annual workshops on space law in various regions by, among other things, encouraging members of the Committee to send experts as lecturers to the workshops and providing the Office with informational material and background documentation or publications.

2. Encouraging the participation of international organizations having permanent observer status with the Committee in the work of the Legal Subcommittee

319. The Legal Subcommittee has benefited from the participation of intergovernmental and non-governmental organizations with activities in space law, including those that do not have permanent observer status with the Committee, such as Unidroit and the European Organisation for the Exploitation of Meteorological Satellites. Entities of the United Nations system and other international organizations having permanent observer status with the Committee have an important role to play in strengthening the work of the Legal Subcommittee. For example, close collaboration with the International Civil Aviation Organization is indispensable to the consideration by the Subcommittee of the definition and delimitation of outer space, in particular with regard to the legal status of aerospace objects. The Subcommittee should consider how to strengthen the role of such organizations in its work and identify specific actions or mechanisms to encourage and facilitate their participation.

320. To date, only three international intergovernmental organizations conducting space activities have declared their acceptance of the rights and obligations under the Rescue Agreement, the Liability Convention and the Registration Convention. International intergovernmental organizations conducting space activities should be encouraged to declare their acceptance of the rights and obligations under those treaties. Relevant international intergovernmental organizations should also be requested to encourage their member States that are not yet parties to the international treaties governing the uses of outer space to give consideration to ratifying or acceding to the treaties in order to enable those international organizations to declare their acceptance of the rights and obligations under those treaties.

3. Strengthening the role of the Office for Outer Space Affairs in implementing the recommendations of UNISPACE III

321. The Office for Outer Space Affairs should strengthen its capacity-building activities in space law and should continue to organize the series of workshops on space law within the framework of the United Nations Programme on Space Applications. To that end, the Office should assist the regional centres for space science and technology education, affiliated to the United Nations, in organizing short-term workshops on space law. In consultation with the regional centres and with assistance from States members of the Committee, the Office should develop a model education curriculum for a short-term training course on space law that could be integrated into the education programme of the regional centres.

322. The Office for Outer Space Affairs should strengthen its technical advisory services to support the operational use of space technologies, in particular in response to action called for in the plan of action contained in the present report (see paras. 228-249) in such areas as environmental monitoring, the management of natural resources, disaster management, global navigation satellite systems and telemedicine. The proposal to be submitted to the Committee, as indicated in paragraph 323 below, should include specific measures to strengthen the technical advisory services with assistance sought from members of the Committee.

323. The Office for Outer Space Affairs should review the activities that are included in the plan of action for implementation by the Office and submit its proposal to the Committee at its forty-eighth session on how those activities could be included in its programme of work. The proposal should indicate any major activities currently included in the programme of work, as approved in the programme budget for the biennium 2004-2005 (A/56/6 (sect. 6)), that should be replaced with new activities recommended in the plan of action.

Notes

[1] *Report of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space, Vienna, 19-30 July 1999* (United Nations publication, Sales No. E.00.I.3), chap. I, resolution 1.

[2] The five outer space treaties are the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (General Assembly resolution 2222 (XXI), annex); the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (Assembly resolution 2345 (XXII), annex); the Convention on International Liability for Damage Caused by Space Objects (Assembly resolution 2777 (XXVI), annex); the Convention on Registration of Objects Launched into Outer Space (Assembly resolution 3235 (XXIX), annex); and the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (Assembly resolution 34/68, annex); the five declarations and legal principles are the Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space (Assembly resolution 1962 (XVIII)); the Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting (Assembly resolution 37/92, annex); the Principles Relating to Remote Sensing of the Earth from Outer Space (Assembly resolution 41/65, annex); the Principles Relevant to the Use of Nuclear Power Sources in Outer Space (Assembly resolution 47/68) and the Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries (Assembly resolution 51/122, annex).

[3] UNISPACE 82 expanded the mandate of the Programme to include, in particular, the following elements: (a) promotion of greater exchange of actual experiences with specific applications; (b) promotion of greater cooperation in space science and technology between developed and developing countries and among developing countries; (c) development of a fellowship programme for in-depth training of space technologists and applications specialists; (d) organization of seminars on advanced space applications and new system developments for managers and leaders of space application and technology development activities, as well as seminars for users in specific applications; (e) stimulation of the growth of indigenous nuclei and an autonomous technological base, with the cooperation of other United Nations organizations and/or States Members of the United Nations or members of the specialized agencies; (f) dissemination of information on new and advanced technology and applications; (g) provision or arrangements for provision of technical advisory services on space applications projects, upon request by Member States or any of the specialized agencies.

[4] General Assembly resolution 51/122, annex.

[5] As reflected in paragraph 1 (a), (b), (c), (d), (e) and (f) of the Vienna Declaration as contained in *Report of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space, Vienna, 19-30 July 1999* (United Nations publication, Sales No. E.00.I.3), chap. I, resolution 1.

[6] As reflected in paragraph 1 (b) of the Vienna Declaration as contained in *Report of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space, Vienna, 19-30 July 1999* (United Nations publication, Sales No. E.00.I.3), chap. I, resolution 1.

[7] *Official Records of the General Assembly, Fifty-fourth Session, Supplement No. 20* and corrigendum (A/54/20 and Corr.1), annex I.

[8] Ibid., *Fifty-seventh Session, Supplement No. 20* (A/57/20), para. 47.

[9] The following 21 entities of the United Nations system and intergovernmental and non-governmental organizations reported on their activities that contributed to implementing recommendations of UNISPACE III: the United Nations Office for Project Services, the United Nations Office on Drugs and Crime, the Economic and Social Commission for Asia and the Pacific, the United Nations Environment Programme, the secretariat of the Convention on Biological Diversity, the Food and Agriculture Organization of the United Nations, the International Civil Aviation Organization, the World Health Organization, the World Meteorological Organization, the United Nations Institute for Training and Research, the Committee on Earth Observation Satellites, the Committee on Space Research, the European Association for the International Space Year, the European Space Agency, the International Astronautical Federation, the International Astronomical Union, the International Law Association, the International Organization of Space Communications, the International Society for Photogrammetry and Remote Sensing, the Regional Centre for Remote Sensing of the North African States and the Space Generation Advisory Council.

[10] *Official Records of the General Assembly, Fifty-fourth Session, Supplement No. 20* and corrigendum (A/54/20 and Corr.1), annex.

[11] *Report of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space* ..., chap. I, resolution 1, para. 1 (e) (iii).

[12] Ibid., para. 1 (b) (ii).

[13] Ibid., para. 1 (c) (iv).

[14] Ibid., para. 1 (c) (ii).

[15] Ibid., para. 1 (b) (i).

[16] As at December 2003, the membership of the Committee consisted of the following 65 States: Albania, Algeria, Argentina, Australia, Austria, Belgium, Benin, Brazil, Bulgaria, Burkina Faso, Cameroon, Canada, Chad, Chile, China, Colombia, Cuba, Czech Republic, Ecuador, Egypt, France, Germany, Greece, Hungary, India, Indonesia, Iran (Islamic Republic of), Iraq, Italy, Japan, Kazakhstan, Kenya, Lebanon, Malaysia, Mexico, Mongolia, Morocco, Netherlands, Nicaragua, Niger, Nigeria, Pakistan, Peru, Philippines, Poland, Portugal, Republic of Korea, Romania, Russian Federation, Saudi Arabia, Senegal, Sierra Leone, Slovakia, South Africa, Spain, Sudan, Sweden, Syrian Arab Republic, Turkey, Ukraine, United Kingdom of Great Britain and Northern Ireland, United States of America, Uruguay, Venezuela and Viet Nam.

[17] Those 20 organizations are: the Association of Space Explorers, the Committee on Earth Observation Satellites, the Committee on Space Research, the European Association for the International Space Year, the European Space Agency, the International Academy of Astronautics, the International Astronautical Federation, the International Astronomical Union, the International Institute for Applied Systems Analysis, the International Law Association, the International Mobile Satellite Organization, the International Organization of Space Communications, the International Society for Photogrammetry and Remote Sensing, the International Space University, the International Telecommunications Satellite Organization, the National Space Society, the Planetary Society, the Regional Centre for Remote Sensing of the North African States, the Space Generation Advisory Council and the Spaceweek International Association.

[18] *Report of the World Summit on Sustainable Development, Johannesburg, South Africa, 26 August-4 September 2002* (United Nations publication, Sales No. E.03.II.A.1 and corrigendum), chap. I, resolution 2, annex.

[19] *Official Records of the General Assembly, Fifty-seventh Session, Supplement No. 20* (A/57/20), annex III.

[20] *Report of the World Summit on Sustainable Development ...* , chap. I, resolution 2, paras. 110 (b), 132 (a) and 133 (b) and (c).

[21] Ibid., paras. 28, 37 (c) and 38 (g).

[22] WSIS-03/GENEVA/DOC/5-E.

[23] Ibid., para. 9 (d).

[24] Ibid., para. 9 (i).

[25] *Official Records of the General Assembly, Fifty-eighth Session, Supplement No. 6* (A/58/6/Rev.1), part II, sect. 6.

[26] Ibid., paras. 6.6 and 6.7.

[27] United Nations Environment Programme, *Convention on Biological Diversity* (Environmental Law and Institution Programme Activity Centre), June 1992.

[28] *Report of the United Nations Conference on Environment and Development, Rio de Janeiro, 3-14 June 1992* (United Nations publication, Sales No. E.93.I.8 and corrigenda), vol. I: *Resolutions Adopted by the Conference*, resolution 1, annex II.

[29] *Report of the World Summit on Sustainable Development* ..., chap. I, resolution 2, paras. 108 and 111.

[30] Ibid., para. 7 (c).

[31] *Report of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space* ..., chap. I, resolution 1, annex.

[32] Ibid., resolution 1, para. 1 (a) (v), (d) (iii) and (vii) and (f) (i).

[33] Those summits and global conferences included the World Summit on Sustainable Development, which adopted the Plan of Implementation (*Report of the World Summit on Sustainable Development ...* , (chap. I, resolution 2, annex), the International Conference on Financing for Development, which adopted the Monterrey Consensus (*Report of the International Conference on Financing for Development, Monterrey, Mexico, 18-22 March 2002* (United Nations publication, Sales No. E.02.II.A.7), chap. I, resolution 1, annex) and the World Summit on the Information Society, the first phase of which adopted a Plan of Action (WSIS-03/GENEVA/DOC/5-E).

[34] InterAcademy Council (Amsterdam, Netherlands, January 2004).

[35] The InterAcademy Council was created in 2000 by 90 of the world's science academies to provide expert knowledge to international bodies such as the United Nations and the World Bank.

[36] Commission on the Private Sector and Development, *Unleashing Entrepreneurship: Making Business Work for the Poor* (United Nations Development Programme, New York, March 2004).

[37] Such proposals include: an international mapping and remote sensing satellite system, presented at the sixteenth Congress of the International Society for Photogrammetry and Remote Sensing (Kyoto, Japan, July 1988); "Mission Peace", to conduct, among other things, land and ocean monitoring, global ozone monitoring and measurement of air pollution and aerosol, proposed by the Indian Space Research Organization to the Second Meeting of the Space Agency Forum for International Space Year (Frascati, Italy, May 1989); and a World Environment and Disaster Observation Satellite System, an initiative of the Society of Japanese Aerospace Companies

presented at the United Nations/Economic and Social Commission for Asia and the Pacific/United Nations Disaster Relief Office Workshop on the Applications of Space Techniques to Combat Natural Disasters (Beijing, September 1991).

[38] European Space Agency, *The European Space Sector in a Global Context: ESA's annual analysis 2003*, ESA/C(2004)32 (Paris, 2004).

[39] For example, in the series of the European Commission's framework programmes for research and technical development, consisting of networks of excellent and integrated projects, aeronautics and space was included for the first time as one of the thematic priorities in the Sixth Framework Programme, covering the period 2002-2006. Space-related projects are expected to receive €300 million.

[40] Examples of international private sector associations include the World Business Council for Sustainable Development, the World Economic Forum, the Sustainable Development Initiative, the Global Mining Initiative and the Sustainable Fisheries Foundation.

[41] Examples of such regional players include the West African Business Network, the Commonwealth Business Forum, the Council on Foundations and the European Foundation Centre.

[42] *Report of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space* ..., chap. I, resolution 1, para. (f) (ii).

[43] Reports of the Expert on Space Applications issued since 2000 are contained in the following documents: A/AC.105/730, A/AC.105/750, A/AC.105/773, A/AC.105/790 and Corr.1 and A/AC.105/815.

[44] The increase in funding in 2002 was due to a one-time contribution of a significant amount made by one member State.

[45] *Official Records of the General Assembly, Fifty-eighth Session, Supplement No. 20* (A/58/20), para. 138.

[46] *Report of the United Nations Conference on Environment and Development* ..., vol. I: *Resolutions adopted by the Conference*, resolution 1, annex II.

[47] *Report of the World Summit on Sustainable Development* ..., chap. I, resolution 2, annex, para. 145.

[48] The portal aims to provide free access to Earth observation education and training resources and to establish an effective coordination and partnership mechanism among CEOS agencies and institutions. Once developed, the portal should provide an interface to a comprehensive database useful both as a reference source and as an educational tool.

Annex I

Summary of proposed actions, entities to carry out those actions and expected benefits

A. Proposed actions and expected benefits from using space to support global agendas for sustainable development

Proposed action	*Entities to carry out action*	*Expected benefit*
Establishing a closer link with the work of the Commission on Sustainable Development		
Examine the contributions that space science and technology and their applications can make and provide substantive inputs for the work of the Commission on Sustainable Development in addressing the issues selected as thematic clusters.	Committee on the Peaceful Uses of Outer Space	1. Increased synergy between the work of the Committee and that of the Commission on Sustainable Development in taking further action to address the obstacles and constraints identified by the Commission in carrying out the Plan of Implementation of the World Summit on Sustainable Development. 2. Increased contribution to the integrated and coordinated implementation of and follow-up to the outcomes of major United Nations conferences and summits in the economic and social fields
Identify actions called for in the Plan of Implementation of the World Summit on Sustainable Development and establish follow-up programmes.	Space agencies and other space-related entities	
Applying the results of space research to promote sustainable development		
Consider developing a sustainable development agenda that can benefit from space technology, at a level commensurate with its capability and resources Consider undertaking measures towards the systematic collection, accurate analysis and proper management of space-acquired and in situ data. Take advantage of the capacities of international entities that are active in fields relating to the environment to build a strong scientific and technical foundation for the discussion of sustainable development issues.	Member States	1. Identification and use of appropriate and affordable space technology to support sustainable development agendas. 2. Increased availability of comprehensive and reliable data to better support decision-making in achieving sustainable development agendas. 3. Better use of available capacities of relevant international entities in building a sound scientific and technical foundation, in particular in developing countries, to better address sustainable development issues.

Proposed action	*Entities to carry out action*	*Expected benefit*
Developing a comprehensive, worldwide environmental monitoring strategy		
Coordinate the implementation, at the global level, of the work plan developed by the Action Team on the Environmental Monitoring Strategy to launch a space-based worldwide strategy for environmental monitoring.	Committee on the Peaceful Uses of Outer Space	1. Increased availability of adequate, relevant space-related techniques for environmental monitoring. 2. Enhanced capacity of national staff in the use of satellite data in environmental monitoring. 3. Strengthened partnership between relevant national, regional and international institutions and increased participation of non-governmental organizations and national personnel in environmental monitoring. 4. Enhanced regional cooperation and knowledge-sharing on specific, critical environmental issues.
Improving the management of the Earth's natural resources		
Articulate the exact information needs of all stakeholders involved at all levels by implementing pilot and demonstration projects. Take advantage of existing capacity-building opportunities and resources for specialized training.	Member States that use or plan to use Earth observations on an operational basis in the management of natural resources	1. Better operational use of Earth observations to meet the precise information needs of all stakeholders involved in the management of natural resources. 2. Further development of human resources necessary for the operational use of Earth observations in the management of natural resources. 3. Sharing of more information with more users on best practices in the use of Earth observation data in natural resources management.
Maintain and disseminate a compilation of best practices in the use of Earth observation data in natural resources management. Organize specialized training courses on the operational use of Earth observations.	Office for Outer Space Affairs	
Contribute additional information to the compilation of best practices in the use of Earth observation data in natural resources management.	Member States	

B. Proposed actions and expected benefits in developing coordinated, global, space capabilities

Proposed action	*Entities to carry out action*	*Expected benefit*
Maximizing the benefits of existing space capabilities for disaster management		
Conduct a study on the possibility of creating an international entity to provide for coordination and the means of optimizing the effectiveness of space-based services for use in disaster management. Develop a case history of the benefits of using space technologies for disaster management and establish a sample product catalogue. Conduct a study on the possibility of establishing a web site on the web site of the Office for Outer Space Affairs for improved access to Earth observation data archives.	The Committee on the Peaceful Uses of Outer Space, through an ad hoc expert group, with experts to be provided by interested member States and relevant international organizations with coordination by the Office for Outer Space Affairs.	1. Identification of the best mechanism to enhance coordination at the global level among space-based system operators and service providers to better respond to the needs of disaster management and civil protection agencies while increasing the utilization of those systems and services. 2. Enhanced sharing of information on the available space-based products that support disaster management and the benefits of using space technologies for disaster management. 3. Identification of the best ways to improve Internet-based access to archived Earth observation data for use in disaster management. 4. Increased capacity of developing countries in using space technologies for disaster management.
Consider allocating some resources and funds for disaster management in own countries, or in countries for which the international organizations are responsible, to using space technology. Consider identifying single points of contact to focus internal disaster management efforts and to provide liaison with external efforts with respect to the use of space technology for disaster management.	Government and international organizations	
Join and strengthen the International Charter "Space and Major Disasters"	Member States with space agencies having remote sensing satellite capabilities	

Proposed action	*Entities to carry out action*	*Expected benefit*
Maximizing the benefits of the use and applications of global navigation satellite systems to support sustainable development		
Establish an International Committee on Global Navigation Satellite Systems (GNSS)	GNSS and augmentation providers with appropriate international organizations	1. Optimized compatibility and interoperability. 2. Identification of mechanisms to implement measures to protect the reliability and integrity of GNSS signals. 3. Enhanced coordination in GNSS modernization activities to meet user needs. 4. Increased training opportunities, particularly in developing countries, in the use of applications of GNSS. 5. Enhanced exchange of information among users and providers of GNSS. 6. Easier access to information on GNSS activities, reference material and sources for obtaining technical assistance.
Develop and maintain a web site to disseminate information on GNSS activities, including training opportunities and sources for obtaining assistance in integrating GNSS into national infrastructure.	Office for Outer Space Affairs	

C. Proposed actions and expected benefits in the use of space to support specific agendas to meet human development needs at the global level

Proposed action	*Entities to carry out action*	*Expected benefit*
Enhancing weather and climate forecasting		
Provide support, including the necessary financial resources, for the implementation of the WMO Space Programme and its Long-term Strategy. Support those national and international entities that provide space systems that seek to meet the WMO requirements.	Member States	1. Reduction in losses due to weather-related natural disasters through enhanced accuracy and timeliness of early warning of destructive weather events and more accurate short- and medium-term weather prediction. 2. More effective decision-making on food production, investment in infrastructure development and management of freshwater resources based on more reliable information resulting from regionally specific, yearly water cycle predictions, annual to biennial El Niño prediction, decade-scale climate predictions and longer-term climate-change monitoring.
Improving medical and public health services through the use of space technologies		
Convene an international conference on telemedicine for experts, government officials and decision makers, including those from ministries responsible for public health.	The Office for Outer Space Affairs, in cooperation with WHO and other relevant United Nations entities and international organizations, as well as Member States	1. Focused international efforts in the priority areas for implementing telemedicine projects. 2. Needs in telemedicine of developing countries defined in a more comprehensive manner. 3. Practical and realistic plan for establishing a cardiovascular-disease knowledge-management network.
Invite WHO to address the issue of telemedicine at the World Health Assembly.	General Assembly	
Prepare a report on the status and potential of telemedicine.	Scientific and Technical Subcommittee, through an enlarged Action Team on Public Health	

Proposed action	*Entities to carry out action*	*Expected benefit*
Consider mechanisms to conduct a study on the feasibility of establishing a possible international cardiovascular-disease knowledge-management network.	Scientific and Technical Subcommittee	
Promoting cooperation in the study of near-Earth objects as threats to society at large		
Identify action to be taken at the national level or through international cooperation to research, detect, search for and make follow-up observations of NEOs and other relevant activities.	The Committee on the Peaceful Uses of Outer Space through its Scientific and Technical Subcommittee	Enhanced cooperation and coordination at the global level in research, detection, search and follow-up observations of NEOs.
Consider the recommendations contained in various reports on NEOs and help plan the necessary multidisciplinary activity.	International Council for Science	

D. Proposed actions and expected benefits in strengthening overarching capacity development

Proposed action	*Entities to carry out action*	*Expected benefit*
Increasing awareness of space benefits to improve the economic and social welfare of humanity		
Consider its contributions to the work of those entities that are responsible for convening United Nations conferences and/or for implementing their outcomes.	Committee on the Peaceful Uses of Outer Space	1. Increased synergy between the work of the Committee on the Peaceful Uses of Outer Space and that of the entities responsible for convening United Nations conferences and/or for implementing their outcomes. 2. Increased contributions to the integrated and coordinated implementation of and follow-up to the outcomes of major United Nations conferences and summits in the economic and social fields. 3. Increased awareness of the importance of space activities in contributing to promoting sustainable development.

Proposed action	*Entities to carry out action*	*Expected benefit*
Consider integrating the use of space science and technology and their applications in work carried out with a view to achieving the Millennium Development Goals.	Economic Commission for Africa, Economic Commission for Europe, Economic Commission for Latin America and the Caribbean and Economic and Social Commission for Western Asia	
Promote awareness of the role of space science and technology and their applications in support of achieving the internationally agreed development goals.	International and national space-related organizations	
Consider promoting awareness of the human development benefits of space activities as part of activities as the lead agency for the United Nations Decade of Education for Sustainable Development	United Nations Educational, Scientific and Cultural Organization	
Disseminate, electronically through its homepage, updated information on efforts to increase awareness of the importance of space activities.	Office for Outer Space Affairs, in cooperation with UNESCO	
Improving knowledge-sharing by promoting universal access to space-based communication services		
Identify existing and planned space-based communication infrastructures committed to universal access and barriers to the implementation of space-based communication systems.	Action Team on Knowledge-Sharing of the Committee on the Peaceful Uses of Outer Space	Increased international cooperation in better utilizing space-based communication systems to meet the needs of the target groups identified by the Committee on the Peaceful Uses of Outer Space for improving knowledge sharing.
Identify priority areas and target groups for knowledge-sharing and promote the usage of space-based communication systems to assist in improving knowledge-sharing.		
Develop pilot programmes for implementation.		

Proposed action	*Entities to carry out action*	*Expected benefit*
Enhancing capacity-building in space-related activities		
Support the initiatives taken by the Working Group on Education, Training and Capacity-Building of the Committee on Earth Observation Satellites (CEOS), with assistance from the Office for Outer Space Affairs, to develop an Earth observation education and training discovery web portal and to provide Earth observation data free of charge or at the lowest possible cost for educational purposes.	Members of the Committee on the Peaceful Uses of Outer Space	1. Enhanced access by developing countries to training and educational resources to build their capacity in the use of Earth observation technologies. 2. Strengthened capacity of the regional centres for space science and technology education to provide education and training for the benefit of developing countries. 3. Enhanced coordination at the global level in organizing activities to strengthen the capacity of developing countries. 4. Increased support to the UNESCO Space Education Programme as a contribution to the United Nations Decade of Education for Sustainable Development. 5. Coordinate capacity-building activities in space-related areas at the policy level. 6. Increased opportunities to integrate substantive inputs from youth in capacity-building efforts in space-related areas. 7. Increased availability of educational materials in space science for young people around the world. 8. Better utilization of archived satellite images and increased access by developing countries to archived satellite images as basic material for space research and studies.
Support the activities of the regional centres for space science and technology education, affiliated to the United Nations, by developing a database of experts from space agencies who could assist the regional centres by providing space-related education and training materials for the regional centres.	Members of the Committee on the Peaceful Uses of Outer Space that have established space agencies	

Proposed action	*Entities to carry out action*	*Expected benefit*
Assist in the international efforts to coordinate capacity-building activities by disseminating a list of international activities to strengthen capacity of developing countries, in particular those organized by developing countries seeking for assistance.	The Office for Outer Space Affairs and UNESCO, in cooperation with the regional centres for space science and technology education	
Implement capacity-building activities, focusing particularly on teachers, young professionals and decision makers, in order to support the Space Education Programme of UNESCO as a contribution of the Committee on the Peaceful Uses of Outer Space and the Office for Outer Space Affairs to the United Nations Decade of Education for Sustainable Development (2005-2014).	Members of the Committee on the Peaceful Uses of Outer Space in cooperation with the Office for Outer Space Affairs	
Discuss ways and means of coordinating capacity-building activities in space-related areas at the policy level.	Entities of the United Nations system and the Committee on the Peaceful Uses of Outer Space	
Hold workshops and symposiums on a regular basis with the participation of youth to provide opportunities at the regional level for the exchange of experiences in capacity-building efforts.	The Office for Outer Space Affairs and relevant organizations	
Develop and distribute educational booklets covering the fundamentals of space science that could serve as educational tools for young people in all countries.	Space agencies	
Organize a meeting of interested Member States and space agencies to identify parties willing to undertake the actions proposed in the present section on enhancing capacity-building in space related activities.	The Office for Outer Space Affairs, in cooperation with interested Member States and space agencies	

Proposed action	*Entities to carry out action*	*Expected benefit*
Distribute, upon request, free of charge or at the lowest possible cost, satellite images kept in archives over years for use particularly by developing countries.	Countries that have satellite imaging techniques and that possess archives of satellite images	
Identifying sources of financing to support development activities with space applications		
Organize workshops for experts in development banks and aid agencies to learn about possibilities offered by space applications.	The Committee on the Peaceful Uses of Outer Space, through its Action Team on Innovative Sources of Funding	1. Increased possibility of development banks and aid agencies providing funds to support projects with the use of space applications for development purposes.
Identify ways to promote the inclusion of funds for necessary investment in a specific budget and the amortization of that investment in subsequent budgets.		
Identify specific measures to promote the inclusion of training components in projects to be funded and to encourage formal commitment from the Governments concerned to maintain the structures developed and to retain the personnel trained as a result of the project.	The Committee on the Peaceful Uses of Outer Space, through its Action Team on Innovative Funding	
Consider placing a higher priority on capacity-building initiatives in the fields of space science and technology and use official development assistance funds to help achieve capacity-building goals.	Member States receiving official development assistance funds	2. Increased effectiveness of funds provided for projects for development purposes to strengthen local capacity-building.
Make efforts to build partnerships with countries requesting assistance and directly support their capacity-building through exchanges of information and experience.	Member States providing official development assistance funds	
Consider making contributions while allowing full flexibility for the Office of Outer Space Affairs to carry out activities in accordance with the priorities set by the Committee on the Peaceful Uses of Outer Space.	Contributors to the United Nations Trust Fund for the United Nations Programme on Space Applications	3. Increased predictability of contributions to the Trust Fund for the United Nations Programme on Space Applications and increased availability of resources for activities in areas identified as priorities by the Committee on the Peaceful Uses of Outer Space.

Annex II

Summary of the implementation of the recommendations of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III)

	Recommendation[a]	*Action team established*[b]	*Relevant agenda item of the Committee and its subsidiary bodies*	*Other activities and remarks*
1	Develop a comprehensive, worldwide environmental monitoring strategy	Yes	"Matters relating to remote sensing of the Earth by satellite" (considered by the Scientific and Technical Subcommittee at its annual session).	Activities relating to monitoring and protection of the environment (priority theme of the United Nations Programme on Space Applications). The Action Team has submitted its final report (A/AC.105/C.1/L.275).
2	Improve the management of the Earth's natural resources	Yes	Same as for recommendation 1 above; and "Space and society"; and "Space and water" (considered by the Committee on the Peaceful Uses of Outer Space in 2004 and in 2005).	Activities relating to management of natural resources (priority theme of the Programme). The Action Team has submitted its final report (A/AC.105/L.250).
3	Develop and implement the Integrated Global Observing Strategy (IGOS)	No	Same as for recommendation 1 above.	At the invitation of the Scientific and Technical Subcommittee, the IGOS Partnership made a presentation on its activities at the fortieth session of the Subcommittee. In 2002, the Subcommittee noted that the activities of the IGOS Partnership had direct relevance to the recommendation and agreed that there was no need to establish an action team.
4	Enhance weather and climate forecasting	Yes	Same as for recommendation 1 above.	The Action Team has submitted its final report (A/AC.105/C.1/L.269).
5	Minimize harmful effects of space activities on the local and global environment	No		

	Recommendation[a]	*Action team established*[b]	*Relevant agenda item of the Committee and its subsidiary bodies*	*Other activities and remarks*
6	Improve public health services	Yes	"Use of space technology for the medical sciences and public health" (considered by the Scientific and Technical Subcommittee as a single issue at its 2003 session); "Space-system-based telemedicine" (considered by the Subcommittee under a work plan for the period 2004-2006).	Activities relating to telemedicine (priority theme of the Programme).
7	Implement an integrated, global system to manage natural disaster mitigation, relief and prevention efforts	Yes	"Implementation of an integrated, space-based global natural disaster management system" (considered by the Scientific and Technical Subcommittee under a work plan covering the period 2001-2003 and as a single issue at its 2004 session); and "space-system-based disaster management support" (to be considered by the Subcommittee under a work plan for the period 2005-2007).	Activities relating to disaster management (priority theme of the Programme, which launched a training module consisting of regional workshops on the subject). The Action Team has submitted its final report (A/AC.105/C.1/L.273).
8	Promote literacy and enhance rural education through tele-education	No	"Space and education" (to be considered by the Committee under a work plan for the period 2004-2006 under the agenda item "Space and society"); the work plan for 2005 includes examination of space-based services and systems for providing educational opportunities in developing countries, including tele-education.	Activities relating to tele-education (priority theme of the Programme).
9	Improve knowledge-sharing through the promotion of universal access to space-based communication services	Yes		Activities relating to satellite communications under the Programme.

	Recommendation[a]	*Action team established*[b]	*Relevant agenda item of the Committee and its subsidiary bodies*	*Other activities and remarks*
10	Improve universal access to and compatibility of space-based navigation and positioning systems	Yes		The Programme has launched a training module consisting of regional workshops and international meetings of experts on the use and applications of global navigation satellite systems. The Action Team has submitted its final report (A/AC.105/C.1/L.274 and Corr.1 and Corr.2)
11	Promote sustainable development by applying results of space research	Yes		One of the main goals of the Inter-Agency Meeting on Outer Space Activities and the Programme; a new series of symposiums of the Programme in the period 2003-2005 on space applications for sustainable development: supporting the Plan of Implementation of the World Summit on Sustainable Development. The Action Team has submitted its final report (A/AC.105/C.1/L.264 and Corr.1).
12	Improve scientific knowledge of near and outer space through cooperative activities	No	"Support to proclaim 2007 as the International Geophysical and Heliophysical Year" (to be considered by the Scientific and Technical Subcommittee at its 2005 session).	Series of workshops on basic space science organized by the United Nations and the European Space Agency.
13	Improve the protection of the near-Earth space and outer space environments through mitigation of space debris	No	Space debris has been considered by the Scientific and Technical Subcommittee since before UNISPACE III, including through the Working Group on Space Debris since 2004, and is part of the work plan for the period 2002-2005.	
14	Improve the international coordination of activities related to near-Earth objects	Yes	"Near-Earth objects" (to be considered by the Scientific and Technical Subcommittee under a work plan for the period 2005-2007).	

	Recommendation[a]	*Action team established*[b]	*Relevant agenda item of the Committee and its subsidiary bodies*	*Other activities and remarks*
15	Protect the near and outer space environments through further research on the use of nuclear power sources	No	The use of nuclear power sources in outer space has been considered by the Scientific and Technical Subcommittee since before UNISPACE III, including through the Working Group under the item, and is part of the work plans for the periods 2000-2003 and 2003-2006.	
16	Minimize interference with bands in the electromagnetic spectrum	No		Information was provided by the International Telecommunication Union (ITU), the Organization for Economic Cooperation and Development (OECD) and the International Astronomical Union (IAU) at the thirty-eighth and thirty-ninth sessions of the Scientific and Technical Subcommittee on their activities concerning the narrower subject of frequency interference with radio astronomy.
17	Enhance capacity-building by developing human and budgetary resources	Yes	"Mobilization of financial resources to develop capacity in space science and technology applications" (considered by the Scientific and Technical Subcommittee at its thirty-ninth and fortieth sessions); "Space and education" (to be considered by the Committee under a work plan for the period 2004-2006 under the agenda item "Space and society").	One of the main objectives of the Programme in carrying out its activities under each priority theme. The Action Team has submitted its final report (A/AC.105/L.251).
18	Increase awareness among decision makers and the general public of the importance of space activities	Yes	"Space and society" (considered by the Committee).	One of the main objectives of the Programme in carrying out activities under each priority theme. The Action Team has submitted its final report (A/AC.105/L.252).

	Recommendation[a]	*Action team established*[b]	*Relevant agenda item of the Committee and its subsidiary bodies*	*Other activities and remarks*
19	Establish/strengthen national mechanisms for the coordination of space activities	No		
20	Improve the sharing of information on and use of spin-offs from space activities	No	Spin-off benefits of space technology (review of current status has been considered by the Committee since before UNISPACE III).	
21	Provide educational opportunities for youth to learn more about space science and technology and participate in space activities	No	"Government and private activities to promote education in space science and engineering" (considered by the Scientific and Technical Subcommittee at its thirty-eighth session); "Space and society" (to be considered by the Committee, with a special focus on "Space and education", under the work plan for the period 2004-2006).	
22	Create within the Committee on the Peaceful Uses of Outer Space a consultative mechanism to facilitate the participation of youth in cooperative space-related activities	No		The Space Generation Advisory Council was granted permanent observer status with the Committee by the General Assembly in its resolution 56/51; the Programme has held a series of symposiums on enhancing the participation of youth in space activities, supporting the work of the Space Generation Advisory Council.
23	Create awards to recognize outstanding contributions in space activity	No		
24	Reaffirm the role of the Committee on the Peaceful Uses of Outer Space, its subcommittees and its secretariat in the exploration and peaceful uses of outer space	No		Ongoing work of the Committee and its subcommittees through consideration of the items on their agendas.

	Recommendation[a]	*Action team established*[b]	*Relevant agenda item of the Committee and its subsidiary bodies*	*Other activities and remarks*
25	**Ensure sustainable funding mechanisms for regional centres affiliated with the United Nations and enhance support for the United Nations Programme on Space Applications**	No		Fund-raising activities by the Office for Outer Space Affairs to support activities of the Programme.
26	**Encourage the increased use of space-related systems and services by the organizations of the United Nations system and by the private sector**	No	"Means and mechanisms for strengthening inter-agency cooperation and increasing the use of space applications and services within and among entities of the United Nations system" (considered by the Scientific and Technical Subcommittee under the work plan for the period 2001-2003); the Inter-Agency Meeting on Outer Space Activities reports annually to the Subcommittee on the matter.	
27	Invite States to ratify or accede to, and invite intergovernmental organizations to declare acceptance of, the outer space treaties	No	Status and application of the five United Nations treaties on outer space (considered by the Legal Subcommittee at its annual sessions).	Workshops on space law organized by the Office for Outer Space Affairs within the framework of the Programme.
28	Further consider the agenda structure and working methods of the Committee on the Peaceful Uses of Outer Space and its subcommittees	No	Agenda items of both of the subcommittees of the Committee; considered under other matters by the Committee.	
29	Strengthen the coordination of mutually beneficial activities between the Committee on the Peaceful Uses of Outer Space and other United Nations entities	No	"Means and mechanisms for strengthening inter-agency co-operation and increasing the use of space applications and services within and among entities of the United Nations system" (considered by the Scientific and Technical Subcommittee under the work plan for the period 2001-2003); the Inter-Agency Meeting on Outer Space Activities reports annually to the Subcommittee on the matter; "Ways and means of maintaining outer space for	Organization of the open, informal session of the Inter-Agency Meeting; preparation by the Meeting and Committee on the Peaceful Uses of Outer Space members of the list of space-related initiatives and programmes that respond to the Plan of Implementation of the World Summit on Sustainable Development.

	Recommendation[a]	*Action team established*[b]	*Relevant agenda item of the Committee and its subsidiary bodies*	*Other activities and remarks*
			peaceful purposes" (considered by the Committee since before UNISPACE III); the role that space technology could play in the implementation of recommendations of the World Summit on Sustainable Development (considered by the Committee at its annual sessions under the agenda item on "Ways and means of maintaining outer space for peaceful purposes").	
30	Call upon the international community to consider the recommendations of the regional preparatory conferences for UNISPACE III	No		
31	Establish a special voluntary United Nations fund for the implementation of UNISPACE III recommendations	No		Pursuant to General Assembly resolution 54/68, the terms of reference of the Trust Fund for the United Nations Programme on Space Applications have been revised to include the implementation of the recommendations of UNISPACE III.
32	Identify new and innovative sources of financing to support the implementation of UNISPACE III recommendations	Yes	Related to mobilization of financial resources to develop capacity in space science and technology applications, considered by the Scientific and Technical Subcommittee at its thirty-ninth and fortieth sessions.	The workshops organized by the United Nations and the International Astronautical Federation since 2001 include a session to address this subject. The Action Team has submitted its final report (A/AC.105/L.246).
33	Promote further the peaceful uses of outer space through cooperation between "space-faring" and "non-space-faring" countries, as well as among developing countries, and involving civil society, including industry	No		

[a] The recommendations have been numbered in accordance with their order of appearance in the resolution entitled "The Space Millennium: Vienna Declaration on Space and Human Development" adopted by the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III).

[b] For more information on the action teams, see annex V.

Annex III

Achievements of the Committee on the Peaceful Uses of Outer Space and its subsidiary bodies as a result of consideration of issues introduced under the revised agenda structure

Issues introduced under the revised agenda structure			
Issue	*Body and type of consideration (regular item, single issue or item under work plan)*	*Session (year)*	*Achievements*
International Satellite System for Search and Rescue (COSPAS-SARSAT)	Committee on the Peaceful Uses of Outer Space	2002	(a) Reporting by Member States on the activities of COSPAS-SARSAT to the Committee; (b) Acknowledgement of the achievement on the occasion of the twentieth anniversary; (c) New issue considered as part of the item on the report of the Scientific and Technical Subcommittee.
Space and society	Committee on the Peaceful Uses of Outer Space	2002-2003	New issue considered as an agenda item.
Space and education	Committee on the Peaceful Uses of Outer Space	2004-2006	(a) New issue addressed as a special theme of focus under the work plan as part of the consideration of "Space and society"; (b) Synergy with the work of action teams on knowledge-sharing, capacity-building and increasing awareness.
Space and water	Committee on the Peaceful Uses of Outer Space	2004 and 2005	(a) New issue considered as an agenda item; (b) Coordination of work of the Committee with that of the Commission on Sustainable Development, which will address "water" as one of the three thematic clusters for the first two-year cycle, 2004-2005, under its multi-year programme of work (2004-2017).
Symposium	Committee on the Peaceful Uses of Outer Space	2001	Human dimension of space activities was addressed through the organization of a symposium: "The human dimension in space science and technology applications".
Other matters	Committee on the Peaceful Uses of Outer Space	2001	Agreement to grant the Space Generation Advisory Council permanent observer status with the Committee (establishment of a consultative mechanism in the Committee to facilitate the participation of youth in space activities).
Status and application of the five United Nations treaties on outer space	Legal Subcommittee, regular item	2000	(a) Recommendations by the Legal Subcommittee and its Working Group on the issue, with terms of reference from 2002 to 2004 and follow-up action; (b) Results and follow-up activities of the United Nations workshops on space law organized by the Office for Outer Space Affairs.

Issues introduced under the revised agenda structure

Issue	*Body and type of consideration (regular item, single issue or item under work plan)*	*Session (year)*	*Achievements*
Information on the activities of international organizations relating to space law	Legal Subcommittee, regular item	2000	(a) Increased interaction between the Committee and the Legal Subcommittee and other entities in the field of space law; (b) Report of the World Commission on the Ethics of Scientific Knowledge and Technology of the United Nations Educational, Scientific and Cultural Organization brought to the attention of the Legal Subcommittee in 2002; (c) Group of Experts on the Ethics of Outer Space formed to study the World Commission report; report of the Group of Experts was presented to the Legal Subcommittee in 2003 (A/AC.105/C.2/L.240/Rev.1); (d) New issue considered as an agenda item.
Matters relating to: (a) the definition and delimitation of outer space; (b) the character and utilization of the geostationary orbit, including consideration of ways and means to ensure the rational and equitable use of the geostationary orbit without prejudice to the role of the International Telecommunication Union.	Legal Subcommittee, regular item	2000	Agreement of the Legal Subcommittee reached in 2000 on some aspects concerning the use of the geostationary orbit (A/AC.105/738, annex III).
Review of the concept of the "launching State"	Legal Subcommittee, under work plan	2000-2002	(a) Concept of "launching State": results of the work accomplished by the Working Group on the issue and the set of recommendations presented to the Committee on the Peaceful Uses of Outer Space and the General Assembly in 2002; (b) New issue considered as an agenda item.
Examination of the preliminary draft protocol on matters specific to space assets to the Convention on International Interests in Mobile Equipment (opened for signature in Cape Town on 16 November 2001)	Legal Subcommittee, single issue	2001, 2002, 2003, 2004, 2005	(a) Increased cooperation and interactions with the International Institute for the Unification of Private Law (Unidroit); (b) Results of the intersessional informal meetings held in 2001 and 2002 and progress achieved in the examination of the matter by the Legal Subcommittee and its Working Group on the issue, established in 2003; (c) New issue considered as an agenda item.
Practice of States and international organizations in registering space objects	Legal Subcommittee, under work plan	2004-2007	New issue to be considered as an agenda item.

Issues introduced under the revised agenda structure

Issue	*Body and type of consideration (regular item, single issue or item under work plan)*	*Session (year)*	*Achievements*
Symposiums	**Legal Subcommittee**	**2000-2004**	Organization of symposiums by the International Institute of Space Law and the European Centre for Space Law on the following themes: 2000: Legal aspects of commercialization of space activities 2001: Methods of peaceful settlement of space law disputes 2002: Prospects for space traffic management 2003: Reinforcing the Registration Convention 2004: New developments and the legal framework covering the exploitation of the resources of the Moon
International cooperation in human spaceflight	Scientific and Technical Subcommittee, single issue	2000	(a) Information on the activities in human spaceflight provided to the Scientific and Technical Subcommittee; (b) New issue considered as an agenda item.
Presentation on new launch systems and ventures	Scientific and Technical Subcommittee, single issue	2000	(a) Information on new launch systems and ventures provided to the Scientific and Technical Subcommittee and to the Legal Subcommittee for its Working Group on the item on the review of the concept of the "launching State"; (b) New issue considered as an agenda item.
Government and private activities to promote education in space science and engineering	Scientific and Technical Subcommittee, single issue	2001	(a) Reporting by Member States on the subject; (b) Compilation of reports by Member States on the activities for young people (A/AC.105/755 and Add.1 and 2); (c) New issue considered as an agenda item.
Nuclear power sources	Scientific and Technical Subcommittee, under work plan	2000-2003, 2003-2006	(a) Report of the Working Group on the Use of Nuclear Power Sources in Outer Space on a review of international documents and national processes potentially relevant to the peaceful uses of nuclear power sources in outer space; (b) Advancement of the work to be conducted on the use of nuclear power sources in outer space by adopting the work plan for the period 2003-2006, including intersessional work; (c) Possible organizational plans for potential co-sponsorship of an effort to develop an international space nuclear power source technical safety standard and potential advice of the International Atomic Energy Agency (IAEA) to the Scientific and Technical Subcommittee in the preparation of such a standard, prepared by the Office for Outer Space Affairs and IAEA (A/AC.105/C.1/L.268);

Issues introduced under the revised agenda structure

Issue	*Body and type of consideration (regular item, single issue or item under work plan)*	*Session (year)*	*Achievements*
			(d) Increased cooperation between IAEA and the Committee on the Peaceful Uses of Outer Space and its Scientific and Technical Subcommittee and the Office for Outer Space Affairs.
Inter-agency coordination and cooperation	Scientific and Technical Subcommittee, under work plan Committee on the Peaceful Uses of Outer Space	2001-2003	(a) Letter from the Chairman of the Committee to the Secretary-General to bring to his attention the need to consider the contributions of space science and technology to a greater extent in achieving the objectives of major United Nations conferences (A/56/306), following which the General Assembly invited the Inter-Agency Meeting on Outer Space Activities to consider the recommendations of major conferences, resulting in an analysis of the outcomes of the World Summit on Sustainable Development and follow-up exercise by the Inter-Agency Meeting in 2003; (b) A set of recommendations by the Inter-Agency Meeting, endorsed by the Committee on the Peaceful Uses of Outer Space, including (i) an open, informal session of the Inter-Agency Meeting to which members of the Committee were invited; and (ii) joint preparation by the Meeting and the Committee of the list of space-related initiatives and programmes that respond to the recommendations contained in the Plan of Implementation of the World Summit; (c) Increased synergy of the work of the Inter-Agency Meeting and the Committee; (d) New issue considered as an agenda item.
Disaster management	Scientific and Technical Subcommittee, under work plan	2001-2003, 2004, 2005-2007	(a) Identified national and/or regional space-based systems that could be considered as part of a global system for managing natural disasters; (b) Adoption of the multi-year work plan in 2004 for the period 2005-2007; (c) Synergy with the work of the Action Team on Disaster Management; (d) New issue considered as an agenda item.
Space debris	Scientific and Technical Subcommittee, under work plan	2000, 2001, 2002-2005	(a) Advancement of the work to be conducted on space debris; in 2001: question of the costs and benefits of debris mitigation measures; and passivation and limitation of mission-related space debris for launch vehicles; (b) Adoption of the multi-year work plan in 2001 for the period 2002-2005; (c) Consideration of Inter-Agency Space Debris Coordination Committee (IADC) proposals on space debris mitigation, including discussions on ways of endorsing utilization of IADC proposals on space debris mitigation.

Issues introduced under the revised agenda structure

Issue	*Body and type of consideration (regular item, single issue or item under work plan)*	*Session (year)*	*Achievements*
Space-system-based telemedicine	Scientific and Technical Subcommittee, under work plan	2004-2006	(a) New issue considered as an agenda item; (b) Synergy with the work of the Action Team on Public Health.
Near-Earth objects	Scientific and Technical Subcommittee, under work plan	2005-2007	(a) New issue to be considered as an agenda item; (b) Synergy with the work of the Action Team on Near-Earth Objects.
International cooperation in limiting obtrusive space advertising	Scientific and Technical Subcommittee, single issue	2002	(a) Information on the activities of Member States on the subject provided to the Scientific and Technical Subcommittee; (b) Reports by the International Telecommunication Union, the International Astronomical Union and the Organization for Economic Cooperation and Development presented to the Subcommittee; (c) New issue considered as an agenda item.
Mobilization of financial resources	Scientific and Technical Subcommittee, single issue	2002 and 2003	(a) Results of the United Nations and International Astronautical Federation Workshop 2001 on Making Space Applications Operational, session on funding; (b) Synergy with the work of the Action Team on Innovative Sources of Funding; (c) New issue considered as an agenda item.
Use of space technology for the medical sciences and public health	Scientific and Technical Subcommittee, single issue	2003	(a) Findings of the Scientific and Technical Subcommittee on the use of space technology for the medical sciences and public health; (b) Synergy with the work of the Action Team on Public Health; (c) New issue considered as an agenda item.
Solar-terrestrial physics	Scientific and Technical Subcommittee, single issue	2004	New issue considered as an agenda item.
Support to proclaim 2007 International Geophysical and Heliophysical Year	Scientific and Technical Subcommittee, single issue	2005	New issue to be considered as an agenda item.
Symposiums	Scientific and Technical Subcommittee	2000-2004	Organization of industry symposiums on the following themes: 2000: Interactive multimedia satellite services: implications for the twenty-first century 2001: Emerging applications of global navigation satellite systems: a new utility with global benefits 2002: Expanding operational applications of very high resolution remote sensing: potential and challenges in civilian applications 2004: Smaller size, wider use: small satellite applications in agriculture, health and human security.

Annex IV

Participation of Member States and organizations in action teams established by the Committee on the Peaceful Uses of Outer Space

			Countries that are members of the action team (as at 1 June 2004)		*Organizations of the United Nations system, organizations with observer status with the Committee on the Peaceful Uses of Outer Space and other organizations participating in the action team (as at 1 June 2004)*	
	Recommendation[a]	*Chair(s)*	*Number*	*List of countries*	*Number*	*List of organizations*
1	Develop a comprehensive, worldwide environmental monitoring strategy	Iran (Islamic Republic of), Russian Federation and Syrian Arab Republic	23	Argentina, Australia, Belarus, China, France, Iran (Islamic Republic of), Iraq, Italy, Japan, Kazakhstan, Lebanon, Mexico, Mongolia, Morocco, Nigeria, Pakistan, Philippines, Portugal, Russian Federation, Saudi Arabia, Syrian Arab Republic, United Kingdom of Great Britain and Northern Ireland, United States of America	11	DESA, UNDCP, ECE, ESCAP, UNEP, UNESCO,[b] ESA, ISPRS, SGAC, AEHMS, Manila Observatory
2	Improve the management of the Earth's natural resources	India	27	Australia, Azerbaijan, Brazil, Bulgaria, Canada, Chile, China, Czech Republic, France, India, Iran (Islamic Republic of), Iraq, Italy, Japan, Kazakhstan, Lebanon, Mongolia, Morocco, Nigeria, Pakistan, Philippines, Portugal, Russian Federation, Saudi Arabia, Syrian Arab Republic, United Kingdom, United States	6	ECE, ESCAP, UNESCO,[b] SGAC, Manila Observatory, Philippine Astronomical Society
4	Enhance weather and climate forecasting	Portugal and WMO	25	Argentina, Australia, Azerbaijan, Brazil, Bulgaria, Canada, China, Cuba, Czech Republic, Hungary, Iran (Islamic Republic of), Iraq, Italy, Japan, Kazakhstan, Lebanon, Nigeria, Pakistan, Philippines, Portugal, Russian Federation, Saudi Arabia, Syrian Arab Republic, Turkey, United States	5	ESCAP, UNESCO,[b] WMO, Manila Observatory, Philippine Astronomical Society
6	Improve public health services	Canada	19	Australia, Bulgaria, Canada, Cuba, France, Hungary, Iran (Islamic Republic of), Iraq, Italy, Japan, Kazakhstan, Pakistan, Philippines, Portugal, Saudi Arabia, South Africa, Syrian Arab Republic, Turkey, United States	8	ESCAP, WHO,[c] SGAC, Manila Observatory, Philippine Astronomical Society, Telesat Canada, Memorial University, IDRC

			Countries that are members of the action team (as at 1 June 2004)		Organizations of the United Nations system, organizations with observer status with the Committee on the Peaceful Uses of Outer Space and other organizations participating in the action team (as at 1 June 2004)	
	Recommendation[a]	*Chair(s)*	*Number*	*List of countries*	*Number*	*List of organizations*
7	Implement an integrated, global system to manage natural disaster mitigation, relief and prevention efforts	Canada, China and France	41	Argentina, Australia, Azerbaijan, Belarus, Bolivia, Canada, Chile, China, Colombia, Cuba, Czech Republic, Ecuador, Egypt, Finland, France, Germany, Greece, Hungary, India, Indonesia, Iran (Islamic Republic of), Italy, Japan, Kazakhstan, Lebanon, Malaysia, Mexico, Morocco, Nigeria, Pakistan, Peru, Philippines, Portugal, Russian Federation, Saudi Arabia, Senegal, Syrian Arab Republic, Thailand, Turkey, United Kingdom, United States	14	OCHA, ISDR secretariat, UNHCR, ESCAP, UNEP, UNOPS, FAO, UNESCO, WHO,[c] ESA, EURISY, SGAC, Manila Observatory, Philippine Astronomical Society
9	Improve knowledge-sharing through the promotion of universal access to space-based communication services	Malaysia and Greece	10	Belarus, Dominican Republic, Finland, Greece, Indonesia, Iran (Islamic Republic of), Malaysia, Russian Federation, Thailand, Turkey	1	SGAC
10	Improve universal access to and compatibility of space-based navigation and positioning systems	United States and Italy	38	Australia, Austria, Belarus, Brazil, Bulgaria, Canada, Chile, China, Colombia, Czech Republic, Egypt, France, Germany, Hungary, India, Iran (Islamic Republic of), Iraq, Italy, Japan, Lebanon, Malaysia, Mexico, Mongolia, Morocco, Nigeria, Pakistan, Philippines, Poland, Portugal, Republic of Korea, Romania, Russian Federation, Saudi Arabia, Syrian Arab Republic, Turkey, Ukraine, United States, Zambia	14	ESCAP, ITU, ESA, European Commission, Eurocontrol, CGSIC, EURISY, AIAA, IAIN, BIPM, IAG, ICA, FIG, IGS
11	Promote sustainable development by applying the results of space research	Nigeria	27	Azerbaijan, Belarus, Bolivia, Chile, China, Czech Republic, Egypt, India, Iran (Islamic Republic of), Iraq, Lebanon, Malaysia, Monaco, Mongolia, Morocco, Nigeria, Pakistan, Peru, Philippines, Portugal, Russian Federation, Saudi Arabia, South Africa, Syrian Arab Republic, Turkey, United Kingdom, United States	8	ESCAP, UNESCO,[b] ISPRS, EURISY, NSS, SGAC, Manila Observatory, Philippine Astronomical Society
14	Improve the international coordination of activities related to near-Earth objects	United Kingdom	17	Australia, Brazil, China, Czech Republic, Finland, Iran (Islamic Republic of), Iraq, Japan, Kazakhstan, Lebanon, Pakistan, Poland, Russian Federation, Saudi Arabia, Syrian Arab Republic, United Kingdom, United States	7	ESA, COSPAR, IAU, NSS, SGAC, The Spaceguard Foundation, ESSC-ESF

			Countries that are members of the action team (as at 1 June 2004)		Organizations of the United Nations system, organizations with observer status with the Committee on the Peaceful Uses of Outer Space and other organizations participating in the action team (as at 1 June 2004)	
	Recommendation[a]	Chair(s)	Number	List of countries	Number	List of organizations
17	Enhance capacity-building by developing human and budgetary resources	Japan	25	Argentina, Azerbaijan, Bolivia, Brazil, Canada, Colombia, Ecuador, Egypt, France, Hungary, India, Iran (Islamic Republic of), Japan, Kazakhstan, Lebanon, Mexico, Morocco, Nigeria, Pakistan, Peru, Philippines, Portugal, Saudi Arabia, Syrian Arab Republic, United States	7	ESCAP, UNESCO, ESA, COSPAR, IAU, SGAC, Manila Observatory
18	Increase awareness among decision makers and the general public of the importance of space activities	United States, Austria	22	Australia, Austria, Bolivia, Brazil, Czech Republic, Egypt, France, Iran (Islamic Republic of), Iraq, Italy, Kazakhstan, Lebanon, Malaysia, Morocco, Nigeria, Pakistan, Peru, Philippines, Portugal, Saudi Arabia, Syrian Arab Republic, United States	14	ESCAP, UNESCO,[a] ESA, COSPAR, ILA, ISPRS, ISU, EURISY, NSS, SGAC, Spaceweek International Association, Austrian Space Agency, Manila Observatory, Philippine Astronomical Society
32	Identify new and innovative sources of financing to support the implementation of the recommendations of UNISPACE III	France	15	Algeria, Australia, Colombia, Czech Republic, France, Germany, Iran (Islamic Republic of), Kazakhstan, Mexico, Morocco, Nigeria, Pakistan, Philippines, South Africa, Syrian Arab Republic	6	ESCAP, ESA, NSS, SGAC, Manila Observatory, Philippine Astronomical Society

Note: The following abbreviations are used in the table:

AEHMS	Aquatic Ecosystem Health and Management Society	ESSC-ESF	European Space Science Committee of the European Science Foundation
AIAA	American Institute of Aeronautics and Astronautics	EURISY	European Association for the International Space Year
BIPM	International Bureau of Weights and Measures	Eurocontrol	European Organisation for the Safety of Air Navigation
CGSIC	Civil GPS Service Interface Committee	FAO	Food and Agriculture Organization of the United Nations
COSPAR	Committee on Space Research	FIG	International Federation of Surveyors
DESA	Department of Economic and Social Affairs of the United Nations Secretariat	IAG	International Association of Geodesy
ECE	Economic Commission for Europe	IAU	International Astronomical Union
ESA	European Space Agency	ICA	International Cartographic Association
ESCAP	Economic and Social Commission for Asia and the Pacific	IAIN	International Association of Institutes of Navigation

IDRC	International Development Research Centre
IGS	International GPS Service
ILA	International Law Association
ISDR	International Strategy for Disaster Reduction
ISPRS	International Society for Photogrammetry and Remote Sensing
ISU	International Space University
ITU	International Telecommunication Union
NSS	National Space Society
OCHA	Office for the Coordination of Humanitarian Affairs of the United Nations Secretariat
SGAC	Space Generation Advisory Council
UNDCP	United Nations International Drug Control Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNHCR	Office of the United Nations High Commissioner for Refugees
UNOPS	United Nations Office for Project Services
WHO	World Health Organization
WMO	World Meteorological Organization

[a] The recommendations have been numbered in accordance with their order of appearance in the resolution entitled "The Space Millennium: Vienna Declaration for Space and Human Development", adopted by UNISPACE III.

[b] To be communicated through the Office for Outer Space Affairs.

[c] Only to receive information.

Annex V

Summary of the findings, recommendations and actions taken by the action teams established by the Committee on the Peaceful Uses of Outer Space

At its forty-fourth session, in 2001, the Committee on the Peaceful Uses of Outer Space established 11 action teams[a] to implement the recommendations of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III) that had been accorded the highest priority by Member States or for which there had been an offer by a Member State to lead associated activities. At its forty-fifth session, in 2003, the Committee established one additional action team to implement the recommendation relating to knowledge-sharing through the promotion of universal access to space-based communication services. Appendices I-XII of the present annex contain a summary of the work conducted by the 12 action teams, including their findings, recommendations, actions already taken and expected benefits.

Note

[a] See *Official Records of the General Assembly, Fifty-sixth Session, Supplement No. 20* (A/56/20), paras. 50 and 55.

Appendix I

Action Team on the Environmental Monitoring Strategy

Action team number: 1	*Chairpersons*: Parviz Tarikhi (Islamic Republic of Iran), Abdul Rahim Loulou (Syrian Arab Republic) and A. Movlyav (Russian Federation) *Secretariat*: Islamic Republic of Iran

1. *Membership*:

(a) *Countries*: Argentina, Australia, Belarus, China, France, Iran (Islamic Republic of), Iraq, Italy, Japan, Kazakhstan, Lebanon, Mexico, Mongolia, Morocco, Nigeria, Pakistan, Philippines, Portugal, Russian Federation, Saudi Arabia, Syrian Arab Republic, United Kingdom of Great Britain and Northern Ireland and United States of America;

(b) *Organizations*: Department of Economic and Social Affairs of the United Nations Secretariat, United Nations Office on Drugs and Crime, Economic Commission for Europe, Economic and Social Commission for Asia and the Pacific, United Nations Environment Programme, United Nations Educational, Scientific and Cultural Organization,[a] Aquatic Ecosystem Health and Management Society, European Space Agency, International Society for Photogrammetry and Remote Sensing, Space Generation Advisory Council and Manila Observatory.

2. *Brief mission statement*:

(a) Address the needs and requirements for use and protection of the environment through improved monitoring methods approved by different countries and organizations;

(b) Develop a comprehensive worldwide environmental monitoring strategy for long-term global observations by building on existing space and ground capabilities.

3. *Findings*:

(a) In order to implement a comprehensive environmental monitoring strategy, the available and produced data should be shared between countries and organizations for better efficiency and economy;

(b) The developed countries can support setting up the strategy technically, while developing countries can provide field and ground data and information;

(c) The partnership between relevant national, regional and international institutions should be enhanced and the needed capacity should be built;

(d) Space-based observations have proven to be an effective and strong tool for environmental monitoring. The use of satellite data for environmental reporting has increased, but the full potential remains untapped. Data management and the setting up of databases with acquired monitoring data are the next step towards establishing an environmental monitoring system. The availability of data for planners, decision makers, specialists and scientists involved in the issues related to environmental monitoring is also essential.

4. *Recommendations for further action*:

(a) The Action Team is proposing a work plan to launch a worldwide strategy for environmental monitoring, ensuring the sustainable use of ecosystems and promoting regional cooperation on critical environmental issues. The work plan should concentrate resources and efforts on achieving greater technical and scientific cooperation, enhancing knowledge and exchange of experience among countries and organizations, developing policies leading to sustainable environmental development and building upon the current development and national environmental action plans and rural development strategies;

(b) The work plan consists of the following four technical components: (i) networking and knowledge-sharing; (ii) capacity-building of national and regional organizations; (iii) regional systems for collection and distribution of information; and (iv) space technology applications for environmental monitoring. Each of these components will consist of a set of outputs, which will be delivered through specific activities;

(c) The most effective solution for the continuation of reliable, integrated comprehensive environmental monitoring is to develop an institutional mechanism, consisting of interdisciplinary activities with scientific, technical, economic, political and legal aspects and that is constantly active on a global scale in the interests of environmental protection and for the benefit of all countries. This should gradually evolve towards the creation of a united environmental monitoring system, with the following key features: (i) globally acceptable, integrated and comprehensive; (ii) supported by well-structured data collection systems at the national, regional and global levels and coordinated with socio-economic information systems; (iii) containing effective tools for data analysis and processing to produce information and generate knowledge accessible to officials and the general public; (iv) well known to policy and decision makers for its presentation of data and information in an easily understandable format;

(d) The first step in creating such a system could be a resolution of the General Assembly that defines the status of the monitoring system. At the early stages of establishing the monitoring system, a strategy for integrated, comprehensive environmental monitoring could be implemented through pilot projects, which would allow local communities to take practical steps and to test and practise the main technological approaches and basic ideas.

5. *Implementation already initiated*:

(a) A questionnaire on the environmental monitoring and observation capabilities and possibilities of the member countries and organizations was prepared and distributed among members of the Action Team;

(b) The Action Team made efforts to expand and develop its activities and coverage of work by accepting new members, such as the Aquatic Ecosystem Health and Management Society;

(c) The Action Team reviewed existing global monitoring organizations and strategies, including the Integrated Global Observing Strategy, the Committee on Earth Observation Satellites, the World Meteorological Organization, the Global Monitoring for Environment and Security initiative and others, in order to study overlaps, gaps and divergences;

(d) Keeping in mind recommendation (c) above, the Action Team has initiated two pilot projects: one for remote sensing applications for monitoring of desertification and the other for the establishment of an institute on the use of integrated comprehensive data in environmental monitoring, with a series of workshops and training activities as well as regional centres for environmental monitoring.

6. *Indication of impediments to implementation*:

Limited contributions to the work of the Action Team from its members.

7. *Benefits to be derived from implementation*:

(a) Ensuring the sustainable use of ecosystems through (i) the implementation of an operational system for the monitoring of the dynamics of the desertification phenomenon in arid and semi-arid areas on selected sites; (ii) adaptation and assessment of relevant space techniques for the monitoring of degraded areas at test sites; (iii) provision of guidelines for the effective implementation of desertification monitoring at the selected test sites in the light of their particular conditions; (iv) support to the capacity-building of national institutions in the field of monitoring and evaluation of desertification; (v) enhancement of the partnership between the relevant subregional and national organizations and institutions;

(b) Promoting national, regional and global cooperation on critical environmental issues. The monitoring technology presented in the report of the Action Team (A/AC.105/C.1/L.275) provides a comprehensive and economically effective structure for the organization of work, bringing together all modern infrastructure for receiving, processing and distributing data and information, including satellite, aerial and ground equipment for data collection, Global Positioning System/Global Navigation Satellite System applications, communication support, software for data processing and integration into geographical information systems and other information systems.

8. *Progress made by the Action Team*:

(a) The Action Team held four meetings in Vienna during the sessions of the Committee on the Peaceful Uses of Outer Space and its Scientific and Technical Subcommittee;

(b) The Action Team continues the compilation of comprehensive information on an environmental monitoring strategy provided by its members and is exploring possibilities and developing plans for implementation.

[e] To be contacted through the Office for Outer Space Affairs of the United Nations Secretariat.

Appendix II

Action Team on the Management of Natural Resources

Action team number: 2	*Chairperson*: V. Jayaraman (India)

1. *Membership*:

(a) *Countries*: Australia, Azerbaijan, Brazil, Bulgaria, Canada, Chile, China, Czech Republic, France, India, Iran (Islamic Republic of), Iraq, Italy, Japan, Kazakhstan, Lebanon, Mongolia, Morocco, Nigeria, Pakistan, Philippines, Portugal, Russian Federation, Saudi Arabia, Syrian Arab Republic, United Kingdom of Great Britain and Northern Ireland and United States of America;

(b) *Organizations*: Economic Commission for Europe, Economic and Social Commission for Asia and the Pacific, United Nations Educational, Scientific and Cultural Organization,[a] Space Generation Advisory Council, Manila Observatory and Philippine Astronomical Society.

2. *Brief mission statement*:

Natural resources support the livelihoods of the vast majority of the population in developing countries. The Millennium Development Goals (A/56/326, sect. III) and the World Summit on Sustainable Development have provided the framework for managing natural resources through the ecosystem approach, community participation and "Green governance". The report of the Action Team harmonizes the recommendations of UNISPACE III on natural resource management in line with the perspectives of the Millennium Development Goals and the World Summit.

3. *Findings*:

(a) Earth observation technologies (remote sensing, geographic information systems and modelling) have increasingly been providing valuable information, in spatial and spectral domains, to improve understanding of social processes in relation to the complex interactions between human beings, natural resources and the environment. Examples include deforestation and regrowth in Brazil, population-environment interactions in Thailand, ancient and modern rural development in Guatemala and land use and land cover dynamics in developing countries;

(b) In recent years, Earth observation technologies have been used in some countries to put into context the ecosystem approach towards policy formulation and planning, working out suitable interventions and implementation mechanisms and supporting directly the basis of livelihoods for poor fishermen and farmers;

(c) Promoting large-scale operationalization of Earth observation technologies by Governments, private agencies and non-governmental organizations and at the community and stakeholder levels is of great significance. In order to achieve this and for information to be useful at all levels, it is essential to understand the exact needs that could be addressed through Earth observation technologies. The use of Earth observation technologies, however, must involve all stakeholders in order to become participatory in nature. One way of bringing together all stakeholders could be through pilot or demonstration projects. The results of such projects are more likely to be accepted if a "bottom-up" approach is followed. The involvement of non-governmental organizations helps in integrating concerns at the grass-roots level. The use of Earth observation technologies as information support for "Green governance" and for the implementation of international protocols and conventions holds considerable promise and its success has already been demonstrated in some of the developing countries in the region of Asia and the Pacific;

(d) The use of Earth observation technologies involves a considerable amount of expertise as well as institutional mechanisms to deliver the services and products to the end-users. Among the capacity-building mechanisms, specialized training and institutional partnerships are important. Considering the urgent need for specialized training in the use of Earth observation applications in natural resource management, it is important to promote specialized training opportunities and disseminate best practices through capacity-building activities.

4. *Recommendations for further action*:

(a) The use of Earth observation technologies in natural resource management is important for the success of UNISPACE III, as well as for the achievement of the Millennium Development Goals and the implementation of the recommendations of the World Summit on Sustainable Development. The Office for Outer Space Affairs of the United Nations Secretariat could play the role of a catalyst in promoting and advocating the operational use of Earth observation technologies in building the natural resources base, especially in the framework suggested by the World Summit. The Office is an ideal platform to promote such a concept by advocating the enabling policies among Member States. This should make it possible to conduct proof-of-concept projects aimed at stakeholders and to establish a framework for international cooperation to promote the operational use of Earth observation technologies;

(b) It is important to develop a compendium highlighting best practices in Earth observation applications in natural resource management in line with the recommendations of the World Summit on Sustainable Development. With the analysis of experience and lessons learned based on the success stories gathered from different parts of the world—representing the diversity of the context and variety of the applications—the compendium will provide insights on the various operational issues and demonstrate the benefits of using Earth observation technologies to the stakeholders. The Action Team should take up this assignment as soon as possible;

(c) Earth observation applications in the natural resource sector require an interdisciplinary approach, involving database technologies, modelling frameworks, a multiplicity of themes and development of a decision support system. The interdisciplinary nature of Earth observation applications calls for focused and specialized training, taking into account the new paradigms emanating from recommendations of the World Summit on Sustainable Development. The Office for Outer Space Affairs could take the initiative to organize specialized training courses, taking advantage of the expertise and infrastructure available in the regional centres for space science and technology education affiliated to the United Nations in different parts of the world.

5. *Implementation already initiated*:

The Action Team has initiated the process of compiling the compendium documenting best practices.

6. *Indication of impediments to implementation*:

The limited inputs from members of the Action Team on success stories, lessons learned and expert opinions representing the diversity of the context and variety of Earth observation applications on the subject hampered finalization of the report of the Action Team. Therefore, the report, in its present form, could not document the views and wisdom of all the members of the Team.

7. *Benefits to be derived from implementation*:

(a) In line with the recommendations of UNISPACE III, the implementation of recommendations contained in the report of the Action Team will lead to mobilization of public opinion in favour of using Earth observation technologies in natural resource management, especially in developing countries;

(b) Integration of Earth observation in natural resource management will strengthen ongoing efforts to reach the Millennium Development Goals and implement recommendations of the World Summit on Sustainable Development, besides supporting decisions of Governments and stakeholders worldwide on managing natural resources.

8. *Progress made by the Action Team*:

The Action Team is making efforts to compile a compendium documenting best practices drawn from different parts of the world in managing natural resources.

[a] To be contacted through the Office for Outer Space Affairs of the United Nations Secretariat.

Appendix III

Action Team on Weather and Climate Forecasting

Action team number: 4	*Chairpersons*: F. D. Santos (Portugal) and D. Hinsman (World Meteorological Organization) *Secretariat*: A. Antunes (Portugal)

1. *Membership*:

   (a) *Countries*: Argentina, Australia, Azerbaijan, Brazil, Bulgaria, Canada, China, Cuba, Czech Republic, Hungary, Iran (Islamic Republic of), Iraq, Italy, Japan, Kazakhstan, Lebanon, Nigeria, Pakistan, Philippines, Portugal, Russian Federation, Saudi Arabia, Syrian Arab Republic, Turkey and United States of America;

   (b) *Organizations*: Economic and Social Commission for Asia and the Pacific, United Nations Educational, Scientific and Cultural Organization,[a] World Meteorological Organization, Manila Observatory and Philippine Astronomical Society.

2. *Brief mission statement*:

To address global challenges to enhance weather and climate forecasting through expanded international cooperation in the field of meteorological satellite applications.

3. *Findings*:

(a) The plans existing within the United Nations system and in particular the World Meteorological Organization (WMO) planning process directly address activities needed to enhance weather and climate forecasting through expanded international cooperation in the field of meteorological satellite applications;

(b) The Action Team agreed that mechanisms within and outside of the United Nations system constituted an effective means for international cooperation to achieve the goals set forth in the WMO planning process.

4. *Recommendations for further action*:

(a) Strengthen support for member States through their national meteorological and hydrological services in the implementation of the WMO long-term plan, including the necessary financial resources;

(b) Support for national and international organizations providing space systems (operational as well as research and development) that seek to meet WMO observational requirements.

5. *Implementation already initiated*:

The present space-based observing system is adequate to provide the data, products and services required for the present weather and climate forecasting needs and the vision for the future system responds to the increased needs for weather and climate forecasting. Two specific international groups are the Coordination Group for Meteorological Satellites and the Committee on Earth Observation Satellites. The Coordination Group started as an informal group in 1972, to coordinate the first global geostationary system among satellite providers. The European Space Research Organization, the National Oceanic and Atmospheric Administration of the United States of America and the Japan Meteorological Agency were founder members. In 2002, research and development space agencies contributing to the space-based component of the global observing systems became members of the Coordination Group for Meteorological Satellites. The Committee on Earth Observation Satellites was created in 1984 as a result of recommendations from the Economic Summit of the Group of Seven major industrialized countries. It serves as the focal point for international coordination of space-related, Earth observation activities among space agencies and encourages complementarity and compatibility among experimental and operational space-borne Earth observing systems through coordination in mission planning, promotion of full and non-discriminatory data access, setting of data product standards and development of compatible data products, services and applications.

6. *Indication of impediments to implementation*:

Limited resources to support national and international organizations and to provide adequate training, especially in developing countries.

7. *Benefits to be derived from implementation*:

The extension of reliable weather and climate forecasting and assessment of the causes and course of longer-term Earth system change were two major accomplishments of WMO and its partner organizations that have a demonstrable value to humanity. However, they also opened a door towards a greater range of possibilities in the future. Annual losses due to natural disasters, most of which are weather-related, exceed on average 50,000 lives and tens of billions of dollars. Some research activities indicate that longer-term climate change would have an impact on the distribution, frequency and intensity of severe weather events. Annual decisions on food and fibre production, multi-year investments in infrastructure development and management of freshwater resources, to name just a few contemporary socio-economic issues, could benefit significantly from reliable, extended services and products, such as:

(a) *A 30-minute warning of very destructive weather events*: for example, tornado prediction beyond 10 minutes is notoriously difficult but necessary in susceptible areas;

(b) *A 5-day hurricane track prediction to +/-30 km*: to reduce the number of false warnings resulting from the present landfall location uncertainty of 400 km at 3 days;

(c) *A 10-14 day weather forecast*: new measurements, especially tropospheric winds, and substantial advances in modelling capability can push short- and medium-term weather prediction to the limits;

(d) *A 12-month regional rain rate*: recent efforts in global water cycle modelling indicate the potential to determine regionally specific water cycle projections from global-scale water cycle observations;

(e) *A 15-20 month El Niño prediction*: "hindcasting" of the two most recent El Niño events indicates that this is possible with an adequate system of space-based and in situ observing capability paired with focused modelling efforts;

(f) *A 10-year climate prediction*: decade-scale climate prediction is theoretically possible with the extension of the research systems now being deployed to future operational systems.

8. *Progress made by the Action Team*:

Since its formation, the Action Team has held several workshops and meetings, including those held during sessions of the Committee on the Peaceful Uses of Outer Space and its Scientific and Technical Subcommittee. The review by the Action Team is complete and the implementation of the recommendations listed above will further enhance weather and climate forecasting through expanded international cooperation in the field of meteorological satellite applications.

[e] To be contacted through the Office for Outer Space Affairs of the United Nations Secretariat.

Appendix IV

Action Team on Public Health

Action team number: 6	*Chairperson*: J. Hamilton (Canada)

1. *Membership*:

   (a) *Countries*: Australia, Bulgaria, Canada, Cuba, France, Hungary, Iran (Islamic Republic of), Iraq, Italy, Japan, Kazakhstan, Pakistan, Philippines, Portugal, Saudi Arabia, South Africa, Syrian Arab Republic, Turkey and United States of America;

   (b) *Organizations*: Economic and Social Commission for Asia and the Pacific, World Health Organization,[a] Space Generation Advisory Council, Manila Observatory, Philippine Astronomical Society, Telesat Canada, Memorial University and International Development Research Centre.

2. *Brief mission statement*:

   To improve public health services by expanding and coordinating space-based services for telemedicine.

3. *Findings*:

   (a) There is a legitimate need for space-based services for telemedicine, whether in countries that are members of the Group of Eight or in less developed countries;

   (b) In addition to telemedicine, space-based technologies have other applications to improve public health, for example:

   (i) To identify and monitor situations conducive to emergence of specific diseases;

   (ii) To conduct surveillance at the national level to identify and monitor spread of infectious diseases;

   (iii) To maintain data on best medical practices and disseminate that information on a global basis;

   (iv) To use space-based technologies for continuing education for the general public and for medical professionals;

   (c) The uses of space-based technologies listed above are specifically applicable to disease monitoring and mitigation in addition to improving general public health.

4. *Recommendations for further action*:

   (a) Establishment of a cardiovascular-disease knowledge-management network;

   (b) Holding of an international global United Nations conference for telemedicine specialists and government officials to discuss such issues as best practices and experience in providing telemedicine services;

   (c) Compilation of a report on the status and potential of telemedicine worldwide; the report would: (i) examine the range of telemedicine initiatives worldwide; (ii) identify the most promising areas for implementation; (iii) examine the needs for telemedicine, especially in developing countries; and (iv) propose steps and develop recommendations for decision makers.

5. *Implementation already initiated*:

(a) The initiative to establish a cardiovascular network (recommendation (a)) is at a standstill owing to lack of funding. Efforts are still being made to identify seed funding, in order to initiate feasibility studies and pilot projects;

(b) There have been a number of offers to hold a telemedicine workshop on the margins of scheduled conferences, such as Med-e-Tel, to be held in Luxembourg, a European Association for the International Space Year (EURISY) conference, to be held in Rabat, and a cardiovascular conference to be held in Milan, Italy; an offer has also been received to convene a full conference to be hosted by the Ministry of Health of the Syrian Arab Republic. All these options are under consideration;

(c) The Organization for Economic Cooperation and Development (OECD) has drafted a report on the global status of telemedicine and circulated it among national health authorities for comments; once the final report of OECD is published, the Space Generation Advisory Council (SGAC) has agreed to expand that report to cover any points from recommendation (c) above that are not addressed;

(d) The Scientific and Technical Subcommittee has included an item on "Space-systems-based telemedicine" under a three-year work plan, covering the period 2004 to 2006, for member States to share their experiences and views on telemedicine; this should complement the report being prepared by OECD and SGAC.

6. *Indication of impediments to implementation*:

(a) Difficulty of securing funding for the initial project of establishing a cardiovascular-disease knowledge-management network;

(b) While Canada had offered to lead the cardiovascular network initiative, other members of the Action Team were invited to complete the other two actions, to implement recommendations (b) and (c) above.

(Morocco has agreed to include the subject of telemedicine in a conference taking place in July 2004 (the Chair of the Action Team is assisting this effort); various additional offers were also received (see para. 5 (b) above). No member of the Action Team has offered to lead the compilation of the report under recommendation (c). However, the report prepared by OECD and SGAC should satisfy this specific action item (see para. 5 (c) above).)

7. *Benefits to be derived from implementation*:

(a) Overall improvement of the well-being of people worldwide;

(b) Better disease monitoring and management at both national and global levels;

(c) Improved educational opportunities for the general public and for medical professionals.

8. *Progress made by the Action Team*:

(a) Little progress has been made to date. The cardiovascular disease knowledge management network concept is still on hold owing to lack of funding;

(b) The Chair of the Action Team is now working directly with the organizers of the EURISY conference to be held in Rabat to have an element of telemedicine included. Other invitations for a tele-health conference are under consideration;

(c) It is recommended that the Action Team pursue a new project or focus on the Scientific and Technical Subcommittee's work plan.

* Only to receive information.

Appendix V

Action Team on Disaster Management

Action team number: 7	*Chairpersons*: Li Chuanrong (China), J. Breton (France) and S. Parashar (Canada) *Secretariat*: Canada, China and France

1. *Membership*:

(a) *Countries*: Argentina, Australia, Azerbaijan, Belarus, Bolivia, Canada, Chile, China, Colombia, Cuba, Czech Republic, Ecuador, Egypt, Finland, France, Germany, Greece, Hungary, India, Indonesia, Iran (Islamic Republic of), Italy, Japan, Kazakhstan, Lebanon, Malaysia, Mexico, Morocco, Nigeria, Pakistan, Peru, Philippines, Portugal, Russian Federation, Saudi Arabia, Senegal, Syrian Arab Republic, Thailand, Turkey, United Kingdom of Great Britain and Northern Ireland and United States of America;

(b) *Organizations*: Office of the United Nations High Commissioner for Refugees, Office for the Coordination of Humanitarian Affairs of the United Nations Secretariat, secretariat of the International Strategy for Disaster Reduction, Economic and Social Commission for Asia and the Pacific, United Nations Environment Programme, United Nations Office for Project Services, Food and Agriculture Organization of the United Nations, United Nations Educational, Scientific and Cultural Organization, World Health Organization," European Space Agency, European Association for the International Space Year, Space Generation Advisory Council, Manila Observatory and Philippine Astronomical Society.

2. *Brief mission statement*:

Studying and recommending the implementation of an integrated operational global system, especially through international cooperation, to manage natural disaster mitigation, relief and prevention efforts through Earth observation, communications and other space-related services, making maximum use of existing capabilities and filling gaps in worldwide coverage.

3. *Findings*:

(a) Disasters such as floods, earthquakes, fires, oil spills, droughts and volcanic eruptions indiscriminately affect all parts of the globe; thus, coordinated international efforts are required to minimize their impact. Disaster relief requires timely and up-to-date geo-social databases or thematic maps and situational analyses through the full cycle of disaster management, namely, prevention and mitigation, preparedness, response and recovery;

(b) Space technology such as for Earth observation (including meteorological satellites), communications, as well as navigation and positioning, can provide the necessary information for disaster management and the means to transmit that information to decision makers in a timely manner. Considerable investment has been made and is planned globally to build up space assets in the above areas as well as their associated ground infrastructure;

(c) However, the applicability and utilization of such assets in support of disaster management continue to lag significantly behind development efforts and remain a major challenge in almost all parts of the world. There are some notable international efforts such as the Charter on Cooperation to Achieve the Coordinated Use of Space Facilities in the Event of Natural or Technological Disasters (also known as the International Charter "Space and Major Disasters", the Disaster Monitoring Constellation, the Global Monitoring for Environment and Security initiative, the Integrated Global Observing Strategy and the recent Group on Earth Observations process, which aim to address the development needs and use of space assets more suited to disaster management; all these ongoing initiatives need to continue and be strengthened;

(d) A considerable gap, however, exists and is likely to remain in all areas of space technology application (technical, operational, educational/training, organizational and financial) to disaster management on a global basis unless a more integrated, coordinated approach is taken. This is because of the diversity and enormity of the challenge and the lack of sustained, focused and coordinated efforts to meet the needs of the disaster management community;

(e) In virtually all countries, the responsibility for managing disasters is distributed and authorities responsible for civil protection lack understanding of the benefits that space technologies bring to them. They lack the capacities, for example tools, infrastructure and expertise, necessary for knowing or evaluating what space-derived information is required, generating the required information from space assets and transmitting, absorbing or utilizing the information in a timely manner.

4. *Recommendations for further action*:

(a) *Recommendation 1.* Establish an international space coordination body, nominally identified as the "disaster management international space coordination organization", (i) to provide affordable, comprehensive and universally beneficial space-based service delivery in support of disaster management by fully utilizing the existing and planned space- and ground-based assets and infrastructures, with the full participation of existing organizations and mechanisms, including disaster management authorities; and (ii) to achieve the development, implementation and operation of an integrated global disaster management space support system that will address all phases of disaster management, including prevention, mitigation, preparedness, response and recovery, and will include all stakeholders, such as space operators, value-added providers and national capabilities.

The Action Team recommends a pragmatic approach, building on the experience of existing operational initiatives such as the International Charter "Space and Major Disasters" in the response phase and expanding the role of the proposed organization to the full cycle of disaster management.

The proposed organization would support (i) the efforts of the Integrated Global Observing Strategy, the Earth Observation Summit, the Global Monitoring for Environment and Security initiative and others in developing space infrastructure more suited to the needs of the disaster management community and filling information and observational gaps; and (ii) education and training efforts of the Economic and Social Commission for Asia and the Pacific, the United Nations Educational, Scientific and Cultural Organization and others to ensure progressive enhancement of disaster management;

(b) *Recommendation 2.* Establish a fund to provide sustainable resources that can be used to apply space technology in support of disaster management and to build the capacity of civil protection authorities to use space technology. The primary contributors to the fund should be development and relief agencies and those who would be the main beneficiaries of disaster reduction, such as insurance companies, lending institutions and end-users;

(c) *Recommendation 3*. Strongly encourage Member States to allocate a portion of their disaster management resources and funds to using space technology and to identify single points of contact to focus their internal disaster management efforts and provide liaison with external efforts.

5. *Implementation already initiated*:

The Action Team developed proposals for action plans to implement each recommendation as indicated below:

For recommendation 1:

(a) Secure critical support for the start-up of the proposed organization;

(b) Set up a small coordination office composed of seconded personnel from member States;

(c) Define key functions of the proposed organization (administration, policy coordination, product standardization, capacity-building for developing countries, provision of education and training for end-users and stakeholders and analysis and promotion of space benefits);

(d) Establish a web site for centralized access to Earth observation data archives;

(e) Establish a sample product catalogue;

(f) Establish a case history of benefits;

(g) Within six months, develop an implementation plan to define:

(i) Management and organizational structure;

(ii) Functionality requirements;

(iii) Resource requirements;

(h) Secure approval of the implementation plan;

(i) Achieve the goal to have a fully functioning organization within three to five years.

For recommendation 2:

(a) Secure critical support to study the concept behind the fund;

(b) Set up a working group to establish needs, develop options, propose preferred solutions and recommend an implementation plan;

(c) Achieve the goal to set up preliminary funds one year after approval and full funds in three years.

For recommendation 3:

(a) Raise awareness of issues and needs;

(b) Promote benefits, namely education efforts, pilot projects for developing countries and proof of concept for space-based response.

6. *Indication of impediments to implementation*:

In order to realize this important initiative and the recommendations of the Action Team, there should first be a commitment and willingness on the part of the space agencies that have sponsored the work of the Action Team to coordinate and utilize their various space assets for the said purpose. Secondly, they should contribute, along with other stakeholders, to start the implementation process towards the proposed disaster management structure.

7. *Benefits to be derived from implementation*: (a) Easier access to space-derived information in all phases of disasters for all countries; (b) Establishment of an international entity dealing with space and natural and technological disasters in a coherent, coordinated fashion; (c) In the long term, significant reduction of the price paid by each country as a result of natural disasters, having adopted enhanced policies in the disaster prevention phase for urban planning and land use, established a more accurate and credible information base for risk prediction and early warning and built a more comprehensive capability to utilize space services fully in the emergency response phase.
8. *Progress made by the Action Team*: The Action Team completed its final report.

[a] Only to receive information.

Appendix VI

Action Team on Knowledge-sharing

Action team number: 9	*Chairpersons*: M. Othman (Malaysia) and V. Cassapoglou (Greece) *Secretariat*: Malaysia

1. *Membership*:

(a) *Countries*: Belarus, Dominican Republic, Greece, Indonesia, Iran (Islamic Republic of), Malaysia, Russian Federation, Thailand and Turkey;

(b) *Organization*: Space Generation Advisory Council.

2. *Brief mission statement*:

Promotion of the use of space-based communication services to improve knowledge-sharing.

3. *Findings*:

(a) The ability to communicate is fundamental to development for many communities in the world. Serving isolated areas such as islands and mountainous areas using terrestrial means is often not possible. Space-based communication services are not restricted by geography and, as such, become the only option for many communities;

(b) Space-based communication systems are capable of providing high-end technology such as broadband communications, mobile telephony and bandwidth on demand;

(c) Space-based communication services have always been large-scale projects and are generally undertaken by the private sector in response to competitive market forces;

(d) The creation and application of new knowledge is essential to the survival of almost any economy and can be used to generate future economic benefits. In order to make knowledge-sharing a reality, appropriate information and communication technology infrastructure should be available. Space-based communication services could provide the connectivity to improve such knowledge-sharing.

4. *Recommendations for further action*:

(a) Identify existing and planned space-based communication infrastructure that is committed to universal access;

(b) Identify the barriers to the implementation of a space-based communication system;

(c) Develop policies and strategic plans that could lead to promoting the use of space-based communication systems in improving knowledge-sharing.

5. *Implementation already initiated*:

A survey is currently being conducted to assess the current space-based communication capabilities within Member States. A questionnaire has been prepared and, with the assistance of the Office for Outer Space Affairs, circulated to Member States.

6. *Indication of impediments to implementation*:

Impediments have not been identified as the survey findings have yet to be reviewed.

7. *Benefits to be derived from implementation*:

Promoting national, regional and global cooperation on using space-based communication services to improve knowledge-sharing.

8. *Progress made by the Action Team*:

(a) The Action Team held two meetings in Vienna during the sessions of the Committee on the Peaceful Uses of Outer Space and its Scientific and Technical Subcommittee;

(b) The Action Team held a meeting in Bangkok in conjunction with the Workshop on the Contribution of Space Communication Technology to Bridging the Digital Divide, which was organized for the benefit of the countries in the Asia and Pacific region;

(c) The Action Team is in the process of compiling information on space-based communication infrastructure within Member States.

Appendix VII

Action Team on Global Navigation Satellite Systems

Action team number: 10	*Chairpersons*: K. Hodgkins (United States of America) and M. Caparole (Italy) *Secretariat*: India, Malaysia (for compilation of the report) and International Telecommunication Union (for the web board management)

1. *Membership*:

(a) *Countries*: Australia, Austria, Belarus, Brazil, Bulgaria, Canada, Chile, China, Colombia, Czech Republic, Egypt, France, Germany, Hungary, India, Iran (Islamic Republic of), Iraq, Italy, Japan, Lebanon, Malaysia, Mexico, Mongolia, Morocco, Nigeria, Pakistan, Philippines, Poland, Portugal, Republic of Korea, Romania, Russian Federation, Saudi Arabia, Syrian Arab Republic, Turkey, Ukraine, United States of America and Zambia;

(b) *Organizations*: Economic and Social Commission for Asia and the Pacific, International Civil Aviation Organization, International Telecommunication Union, European Space Agency, European Commission, European Organisation for the Safety of Air Navigation (Eurocontrol), Civil GPS Service Interface Committee, European Association for the International Space Year, American Institute of Aeronautics and Astronautics, International Association of Institutes of Navigation, International Association of Geodesy, International Bureau of Weights and Measures, International Cartographic Association, International Federation of Surveyors and International GPS Service.

2. *Brief mission statement*:

(a) Survey current efforts to achieve a seamless satellite-based radio navigation and positioning system;

(b) Assess current models of international cooperation and identify those with potential applicability to evolving global navigation satellite systems (GNSS) and services;

(c) Propose specific recommendations for entities of the United Nations, its Member States and other international organizations on actions to promote GNSS user interests, increase the level of awareness and improve the quality and facilitate the utilization of GNSS services, in particular in developing countries.

3. *Findings*:

(a) GNSS and their augmentations are generally recognized as being useful for a wide range of societal, civil and commercial applications. System providers are working to increase awareness among policy makers of the benefits of this technology, but the task is beyond the resources of any individual operator. A coordination mechanism involving operators of GNSS and their augmentations, as well as appropriate international organizations, could easily be established for this purpose;

(b) It appears that the general public and governmental and non-governmental experts understand the basic utility of navigation, positioning and timing services offered by GNSS. While current and future GNSS operators are in a competitive mode, it is fully expected that collaboration will increase in order to serve the user community better. Outreach efforts must move beyond simple awareness among the general public and experts to provide assistance in the integration of GNSS into the basic infrastructure (government, commercial and scientific) of countries, in particular in the developing world. This requires the convening of regular regional workshops (similar to those recently organized by the Office for Outer Space Affairs of the United Nations Secretariat) and the development of "road maps", as well as the preparation of technical reports for the introduction of GNSS services in developing countries;

(c) GNSS signal security and integrity are one of the top priorities for the global user community, regardless of application. There is an urgent need for assistance to national and regional authorities, in particular in developing countries, to establish mechanisms for identifying and eliminating sources of interference that could degrade signals from GNSS and their augmentations.

4. *Recommendations for further action*:

(a) GNSS and augmentation providers should establish an international committee on GNSS that would include appropriate international organizations for the purposes of (i) encouraging compatibility and interoperability; (ii) identifying mechanisms for implementing measures to protect the reliability and integrity of signals at the national, regional and global levels; (iii) establishing user information centres; (iv) developing "road maps" and preparing technical reports for the introduction of GNSS services; (v) organizing regional workshops; and (vi) providing training opportunities in GNSS, in particular in developing countries. It could be necessary to have a secretariat for the proposed committee. It would aim to facilitate the exchange of information among users and providers of GNSS, without prejudice to the roles and functions of GNSS service providers and intergovernmental organizations such as the International Civil Aviation Organization (ICAO), the International Maritime Organization and the International Telecommunication Organization;

(b) (i) The Office for Outer Space Affairs, through the United Nations Programme on Space Applications, should continue to hold regional workshops for promoting the use of GNSS and their augmentations in developing countries;

(ii) The regional centres for space science and technology education affiliated to the United Nations should consider including GNSS programmes in their training activities;

(iii) In cooperation with GNSS and augmentation providers, or the proposed international committee, the Office should maintain a web site to be developed to include information on systems descriptions, recent application developments, training opportunities, sources for assistance in integrating GNSS into national infrastructure as well as in protecting signal reliability and integrity at the national and regional levels. The proposed committee could develop a concept and structure for the web site, as well as identify working methods to collect and update the information on a regular basis. Once that has been done, the web site could become part of the web site of the Office for Outer Space Affairs, to be maintained by the Office in cooperation with the proposed committee, subject to the availability of sufficient resources.

5. *Implementation already initiated*:

The implementation of recommendation 4 (b) (i) above has already started with a series of four regional workshops (held in Austria, Chile, Malaysia and Zambia) and two international expert meetings on GNSS for sustainable development, held in the period 2001-2003 with co-sponsorship of the United Nations, the United States and the European Space Agency. An international workshop held in December 2003 reviewed progress on the implementation of recommendations made by the international meeting of experts that was held in November 2002. That workshop focused on the establishment of terms of reference for the proposed committee. Another meeting is planned for December 2004 in Vienna.

6. *Indication of impediments to implementation*:

As for the recommendations that require action by the Office for Outer Space Affairs, one of the major impediments would be limited resources, including staff resources, to carry out additional work, in particular within the framework of the United Nations Programme on Space Applications. The same would hold true for those recommendations requiring additional resources from system providers. Whereas the civil aviation applications of GNSS are well coordinated through ICAO, the proposed committee would face an uphill task in promoting the use of GNSS for applications in fields other than civil aviation. This is primarily because some of the non-civil aviation applications for providing accurate position location and navigation services are dependent on telecommunications and other infrastructure available in the country. As yet, there is no international body to oversee and coordinate the specifications of the equipment and services in these areas.

7. *Benefits to be derived from implementation*:

Benefits from the implementation of recommendation 4 (a) above would include increased awareness on the part of policy makers of the benefits of GNSS and a subsequent increase in the political support that would result in government funding for the integration of GNSS into the national infrastructure. Benefits from the implementation of recommendations listed under 4 (b) above would include increased training opportunities in GNSS for developing countries, enhanced access by developing countries to information on GNSS and augmentations, as well as their applications and available services, and enhanced technical advisory services for developing countries to use GNSS in their development activities.

8. *Progress made by the Action Team*:

The Action Team has held eight meetings and has (i) compiled comprehensive information on GNSS and augmentations, including policies, system descriptions and associated activities carried out through international cooperation; (ii) conducted a global survey on the existing training opportunities in the field of GNSS; and (iii) identified GNSS applications unique to regions. On the basis of the preliminary findings and recommendations of the Action Team, work is now under way to establish the proposed committee.

Appendix VIII

Action Team on Sustainable Development

Action team number: 11	*Chairperson*: A. A. Abiodun (Nigeria) *Secretariat*: Nigeria

1. *Membership*:

(a) *Countries*: Azerbaijan, Belarus, Bolivia, Chile, China, Czech Republic, Egypt, India, Iran (Islamic Republic of), Iraq, Lebanon, Malaysia, Monaco, Mongolia, Morocco, Nigeria, Pakistan, Peru, Philippines, Portugal, Russian Federation, Saudi Arabia, South Africa, Syrian Arab Republic, Turkey, United Kingdom of Great Britain and Northern Ireland and United States of America;

(b) *Organizations*: Economic and Social Commission for Asia and the Pacific, United Nations Educational, Scientific and Cultural Organization,[a] International Society for Photogrammetry and Remote Sensing, European Association for the International Space Year, National Space Society, Space Generation Advisory Council, Manila Observatory and Philippine Astronomical Society.

2. *Brief mission statement*:

(a) Examine the features that single out space technology as an indispensable component of any viable sustainable development agenda and specifically address how space technology can enhance human understanding and management of fundamental life-support systems—air, land and water—including the assessment and management, for example, of agriculture and food security, safety, the environment, education, transportation, health care and disaster mitigation;

(b) Determine the critical steps that each country should take in order to achieve the space capability necessary to support its sustainable development goals.

3. *Findings*:

(a) The collection and analysis of space-acquired data, including the use of geographical information, is a starting point on the path towards sustainable development. The inability of many societies to undertake development efforts that are sustainable is rooted in poor quality collection, organization and management of data;

(b) Space technology has brought into sharper focus the interdependence of the world on sustainable development issues. This is exemplified by the Principles Relating to Remote Sensing of the Earth from Outer Space (General Assembly resolution 41/65, annex), the volcanic eruption of Mount Pinatubo in 1991 and the entry into force, on 1 November 2000, of the Charter on Cooperation to Achieve the Coordinated Use of Space Facilities in the Event of Natural or Technological Disasters (also known as the International Charter "Space and Major Disasters");

(c) There is growing investment and participation by Member States, in particular by developing countries, in space activities as a result of their recognition of the role of space technology as a viable sustainable development tool.

4. *Recommendations for further action*:

(a) Each country should urgently develop the necessary policy, commensurate with its capability, for space-related sustainable development programmes and should periodically sensitize its decision makers to the value and contribution of space science to human development through the organization of appropriate national and regional conferences. Each country should urgently develop its indigenous personnel through participation in regional centres of excellence in space science and technology and establish networks among national and regional institutions in order to facilitate and enhance collaborative research opportunities;

(b) In order to provide active coordination in environmental activities, international institutions, such as the United Nations Environment Programme and the Food and Agriculture Organization of the United Nations, should provide Member States with intellectual leadership that is built on a strong scientific and technical foundation. In order to provide a reliable basis for decision-making, existing conventions relating to sustainable development should forge stronger links with science-based institutions worldwide, such as the International Society for Photogrammetry and Remote Sensing, the Committee on Space Research and the International Astronautical Federation, and their scientific advisory bodies should be expanded to include experts in the fields of space science and technology;

(c) At the level of political leadership, African and West Asian countries should urgently emulate the organization of programmes at the regional level similar to the activities of the Space Conference of the Americas and the Ministerial Conference on Space Applications for Sustainable Development in Asia and the Pacific. The General Assembly should find a way to evaluate regularly the compliance of Member States with globally agreed sustainable goals.

5. *Implementation already initiated*:

(a) Establishment of regional centres for space science and technology education affiliated to the United Nations;

(b) The ongoing organization of sustainable development activities by the Office for Outer Space Affairs of the United Nations Secretariat, the European Space Agency, the Committee on Earth Observation Satellites and the International Astronautical Federation, in cooperation with Member States;

(c) The entry into force of the International Charter "Space and Major Disasters" on 1 November 2000.

6. *Indication of impediments to implementation*:

(a) Space activities, in particular those which can support sustainable development programmes, are not being identified as a national priority;

(b) Failure to provide the necessary political support at the national level and to make the necessary national financial and other commitments for space-based sustainable development programmes.

7. *Benefits to be derived from implementation*:

(a) Availability of skilled personnel who can contribute to the generation and use of scientific and technical knowledge and the making of adjustments in existing institutional arrangements;

(b) Establishment of regional and international agreements focusing on areas of cooperation in space activities that could support sustainable development efforts, including the establishment of appropriate networks;

(c) Availability of space-related advisory panels that can support the various existing international conventions relevant to sustainable development;

(d) Establishment of agreements between each country and funding entities, such as the United Nations Development Programme, the World Bank and the International Monetary Fund, focusing on providing support for those aspects of the country's development agenda which emphasize sustainable development.

8. *Progress made by the Action Team*:

(a) Through the development of the Action Team's report and participation in international meetings and conferences, members of the Action Team have contributed to the ongoing global awareness of the role of space science and technology in sustainable development;

(b) The Action Team is cooperating with international organizations, such as the Office for Outer Space Affairs, the United Nations Educational, Scientific and Cultural Organization, the Committee on Earth Observation Satellites and the European Space Agency, in their activities on sustainable development for the benefit of Member States;

(c) The Action Team is sensitizing Member States to the need to bridge the digital divide within and across regional blocks and to the role and importance of the International Charter "Space and Major Disasters".

[a] To be contacted through the Office for Outer Space Affairs of the United Nations Secretariat.

Appendix IX

Action Team on Near-Earth Objects

Action team number: 14	*Chairperson*: R. Tremayne-Smith (United Kingdom of Great Britain and Northern Ireland) *Secretariat*: United Kingdom, with assistance from the United States of America, the Committee on Space Research, the International Astronomical Union and the Spaceguard Foundation

1. *Membership*:

(a) *Countries*: Australia, Brazil, China, Czech Republic, Finland, Iran (Islamic Republic of), Iraq, Japan, Kazakhstan, Lebanon, Pakistan, Poland, Russian Federation, Saudi Arabia, Syrian Arab Republic, United Kingdom of Great Britain and Northern Ireland and United States of America;

(b) *Organizations*: European Space Agency, Committee on Space Research, International Astronomical Union, National Space Society, Space Generation Advisory Council, Spaceguard Foundation and European Space Science Committee of the European Science Foundation.

2. *Brief mission statement*:

(a) Review the content, structure and organization of ongoing efforts in the field of near-Earth objects (NEOs);

(b) Identify any gaps in the ongoing work where additional coordination is required and/or where other countries or organizations could make contributions;

(c) Propose steps for the improvement of international coordination in collaboration with specialized bodies.

3. *Findings*:

(a) The threat posed by NEOs is believed to be comparable to more familiar hazards and the risk is global;

(b) A range of scientific areas require support and coordination in order to improve the evaluation and assessment of risk;

(c) Planned, integrated collaboration offers the most cost-effective response for scientific efforts (search, study and planning for mitigation), as well as emergency or civil contingency action.

4. *Recommendations for further action*:

(a) Encourage increased international collaboration to address the issues and improve understanding of the nature of the threat; write improved guidelines for risk management organizations by 2005;

(b) The International Council for Science should consider, and encourage its member organizations to consider, the recommendations contained in various reports (see the work plan and other reference documents, such as the report of the task force on potentially hazardous NEOs commissioned by the Government of the United Kingdom and the findings and conclusions of the Organization for Economic Cooperation and Development (OECD) Global Science Forum Workshop on Near Earth Objects: Risks, Policies and Actions, held in Frascati, Italy, in January 2003), and help plan the necessary multidisciplinary activity (International Council for Science activity planned for 2004, details to be provided);

(c) Relevant activity needs to be better coordinated at the national, regional and international levels using and enhancing existing mechanisms wherever possible. Such activity could be coordinated by the Committee on the Peaceful Uses of Outer Space, possibly by including an agenda item on the subject in the Scientific and Technical Subcommittee at its forty-second and forty-third sessions, in 2005 and 2006. The Action Team will provide a report in support of the agenda item in order to stimulate discussion. The draft work plan will be discussed at the forty-first session of the Subcommittee, in 2004.

5. *Implementation already initiated*:

Activity initiated by the International Council for Science in the NEO area will also consider the issues arising from the OECD Global Science Forum Workshop held in Frascati, Italy. Missions related to NEOs are increasingly being coordinated internationally. The OECD Global Science Forum working group is developing a country-level risk analysis for NEOs as a follow-up to the Workshop.

6. *Indication of impediments to implementation*:

(a) Overlap and competition exist in search and discovery activity and there is no automatic follow-up of observations in many cases;

(b) An overall solution requires the involvement of government as well as science. Scientific disciplines need to work together more and also to address the needs of civil emergency staff.

7. *Benefits to be derived from implementation*:

(a) Greater coordination and cooperation will lead to improved search capability and increased efficiency in the utilization of the telescopes and related resources used for discovery and follow-up activities;

(b) Government needs and research objectives will be given a common frame of reference and will be related to longer-term needs. Common understanding and, thus, communication will be established between government planning for emergencies and relevant academic research. This should lead to an understanding of the need for appropriate and timely data access together with the resource implications.

8. *Progress made by the Action Team*:

Progress has been made in developing the understanding of the Action Team and the Committee on the Peaceful Uses of Outer Space on NEO issues, through presentations made by members of the Action Team at the recent sessions of the Scientific and Technical Subcommittee and the Committee.

Appendix X

Action Team on Capacity-building

Action team number: 17	*Chairperson*: T. Kurasaki (Japan) *Secretariat*: Japan

1. *Membership*:

   (a) *Countries*: Argentina, Azerbaijan, Bolivia, Brazil, Canada, Colombia, Ecuador, Egypt, France, Hungary, India, Iran (Islamic Republic of), Japan, Kazakhstan, Lebanon, Mexico, Morocco, Nigeria, Pakistan, Peru, Philippines, Portugal, Saudi Arabia, Syrian Arab Republic and United States of America;

   (b) *Organizations*: Economic and Social Commission for Asia and the Pacific, United Nations Educational, Scientific and Cultural Organization, European Space Agency, Committee on Earth Observation Satellites, Committee on Space Research, International Astronautical Federation, International Astronomical Union, National Space Society, Space Generation Advisory Council and Manila Observatory.

2. *Brief mission statement*:

To enhance capacity-building activities through (a) sharing information on existing infrastructure such as fellowship programmes; (b) determining how to enhance education and training opportunities; and (c) organizing and developing mechanisms for the exchange of capacity-building information, including established teaching methods, training materials and expertise.

3. *Findings*:

(a) In order to enhance capacity-building as a whole, it is necessary to reduce the gap between space-faring countries and developing countries. Emphasis should be placed on enhancing educational and training opportunities in developing countries by improving access to educational and training information, such as on best-practice cases of space-faring countries. In this regard, more effective utilization of existing training opportunities offered within the United Nations system, such as those by the regional centres for space science and technology education affiliated to the United Nations, should be promoted and an interregional network should be established for information exchange;

(b) All levels of educational and training opportunities, from children to post-doctoral fellows, teachers and experts, should be promoted. For this purpose, educational and training information for all levels should be disseminated and shared, bearing in mind the emphasis placed in developing countries on capacity-building at the university level because of the importance of effective capacity-building, especially in space applications for those countries;

(c) For true capacity-building, it is necessary to look for long-term solutions to today's challenges and, more importantly, greater commitment should be made by the space community and Governments to support local and regional space-related education and training activities.

4. *Recommendations for further action*:

(a) Promote the sharing of educational materials and information;

(b) Coordinate international activities on capacity-building;

(c) Increase assistance to activities of the regional centres;

(d) Enhance opportunities for the ongoing exchange of ideas on capacity-building;

(e) Facilitate the augmentation of budgetary resources and fellowships;

(f) Prepare and distribute educational booklets.

5. *Implementation already initiated*:

(a) Various types of capacity-building activities are being carried out, such as the Global Learning and Observations to Benefit the Environment (GLOBE) Programme, Eduspace of the European Space Agency, the Space Education Programme of the United Nations Educational, Scientific and Cultural Organization (UNESCO), Space Generation Advisory Council activities, the Ad Hoc Working Group on Earth Observation Education and Training of the Committee on Earth Observation Satellites, the Space Technology Applications and Research (STAR) programme of the Asian Institute of Technology and the activities of the Subgroup on Capacity Building of the ad hoc Group on Earth Observations. These activities are summarized in the final report of the Action Team;

(b) A forum for capacity-building was organized by the Action Team in Houston, Texas, United States, on 15 October 2002, with 52 participants from 17 countries and organizations. The results of the forum are available on the web site of the Office for Outer Space Affairs of the United Nations Secretariat (www.oosa.unvienna.org/unisp-3/followup/action_team_17/houston2002/index.html).

6. *Indication of impediments to implementation*:

(a) There is a large gap in capacity-building between space-faring countries and developing countries;

(b) The language problem is one of the barriers that must be taken into account, especially in space education for very young students, as most of the information is available only in English; countries are expected to translate various materials into their own languages, by using the multilingual space dictionary of the International Academy of Astronautics;

(c) Member States and organizations should contribute to the efforts by the Office for Outer Space Affairs in cooperation with UNESCO to enhance coordination at the international level of activities on capacity-building.

7. *Benefits to be derived from implementation*:

Capacity-building activities would be facilitated, especially in developing countries, and capacity-building would be enhanced at all levels and in all regions, contributing to the enhancement of peaceful uses of outer space.

8. *Progress made by the Action Team*:

The Action Team has already held nine coordination meetings. On the basis of input provided in response to the questionnaire circulated by the Action Team and other input from member countries, member organizations and other interested cooperating countries, the Action Team has prepared and submitted its final report, which proposes concrete action plans that should be implemented, for the time being, through international coordination of capacity-building efforts.

Appendix XI

Action Team on Increasing Awareness

Action team number: 18	*Chairpersons*: L. Sperry (United States of America) and J. Wimmer (Austria)

1. *Membership*:

(a) *Countries*: Australia, Austria, Bolivia, Brazil, Czech Republic, Egypt, France, Iran (Islamic Republic of), Iraq, Italy, Kazakhstan, Lebanon, Malaysia, Morocco, Nigeria, Pakistan, Peru, Philippines, Portugal, Saudi Arabia, Syrian Arab Republic and United States of America;

(b) *Organizations*: Economic and Social Commission for Asia and the Pacific, United Nations Educational, Scientific and Cultural Organization,[a] European Space Agency, Committee on Space Research, International Law Association, International Society for Photogrammetry and Remote Sensing, International Space University, European Association for the International Space Year, National Space Society, Space Generation Advisory Council, Spaceweek International Association, Austrian Space Agency, Manila Observatory and Philippine Astronomical Society.

2. *Brief mission statement*:

(a) Evaluate ongoing efforts to increase awareness among decision makers and the general public of the value of space activities and the role space activities can play;

(b) Prepare a report on illustrative examples of successful outreach activities, containing also:

(i) Observations and recommendations on potential outreach activities and potential target audiences, in particular with regard to the work of the Committee on the Peaceful Uses of Outer Space and the Office for Outer Space Affairs of the United Nations Secretariat;

(ii) Recommendations on future outreach activities and potential target audiences.

3. *Findings*:

(a) Recommendation 18 of UNISPACE III to "increase awareness among decision makers and the general public of the importance of space activities" is being implemented at various levels (the intergovernmental, governmental and non-governmental levels), partly within the framework of specifically designed activities;

(b) As it was considered impossible to compile a complete list of relevant activities worldwide, the Action Team is focusing on examining and selecting illustrative examples;

(c) Considerable differences remain as to the emphasis placed by the various relevant actors on increasing awareness.

4. *Recommendations for further action*:

(a) Assessment by the Committee on the Peaceful Uses of Outer Space in the course of its work on reviewing the progress made in the implementation of the recommendations of UNISPACE III;

(b) Observations and recommendations by the Committee and the General Assembly in 2004 regarding the state of implementation of the recommendation and types of possible future action for all relevant actors;

(c) Practical suggestions for future activities of the Committee and the Office for Outer Space Affairs in the framework of the United Nations.

5. *Implementation already initiated*:

(See "Findings", section 3 (a), above.)

6. *Indication of impediments to implementation*:

The vastness of the subject and the diversity of efforts made a comprehensive evaluation and assessment very difficult.

7. *Benefits to be derived from implementation*:

An increase of awareness would lead to a better understanding on how space activities can, in particular, contribute in a cost-effective manner to meeting the internationally agreed development goals, especially the Millennium Development Goals, environmental protection and human security.[b]

8. *Progress made by the Action Team*:

The Action Team, assisted by the Office for Outer Space Affairs, conducted an Internet-based survey by circulating specially designed questionnaires among all Member States as well as organizations having permanent observer status with the Committee on the Peaceful Uses of Outer Space on their efforts to increase awareness of the importance of space activities. The compilation will be made available electronically and continue to be updated, so as to become a comprehensive, dynamic source of information on awareness increasing efforts.

[a] To be contacted through the Office for Outer Space Affairs of the United Nations Secretariat.

[b] As reflected in paragraph 1 (b) of the Vienna Declaration as contained in *Report of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space, Vienna, 19-30 July 1999* (United Nations publication, Sales No. E.00.I.3), chap. I, resolution 1.

Appendix XII

Action Team on Innovative Sources of Financing

Action team number: 32	*Chairperson*: M. Laffaiteur (France)

1. *Membership*:

   (a) *Countries*: Algeria, Australia, Colombia, Czech Republic, France, Germany, Iran (Islamic Republic of), Kazakhstan, Mexico, Morocco, Nigeria, Pakistan, Philippines, South Africa and Syrian Arab Republic;

   (b) *Organizations*: Economic and Social Commission for Asia and the Pacific, European Space Agency, National Space Society, Space Generation Advisory Council, Manila Observatory and Philippine Astronomical Society.

2. *Brief mission statement*:

For many years, the use of space applications, mainly by developing countries, encountered various problems, including the lack of qualified personnel and equipment and especially the absence of financial resources for the implementation of the process. The large scope of the utilization of space technologies, mainly in Earth observation, has been demonstrated during the last 20 years. However, these promising technologies have not supported development as much as they should have.

In this regard, it was decided at UNISPACE III to conduct a study to adopt measures aimed at identifying new and innovative sources of financing at the international level, including in the private sector, in order to support the implementation of the recommendations of UNISPACE III in developing countries. The work plan of the Action Team for 2002 and 2003 was adopted by the Scientific and Technical Subcommittee at its thirty-ninth session, in 2002.

3. *Findings*:

The Action Team has identified three main prerequisite elements for any development project that involves the use of space applications:

(a) *Funding*: Lack of funding is often the major obstacle in introducing space technology into operational development programmes or projects. That obstacle is generally linked to (i) limited awareness of the possibilities and requirements for securing adequate financial resources to support priority programmes; and (ii) difficulty in proving the cost-benefit advantage of space application techniques to decision makers and potential users. Decision makers responsible for these programmes or projects must ensure they provide adequate information to the development banks or aid agencies;

(b) *Political commitment*: Government support is essential for projects or programmes of national scope and for projects for which international funding will be sought. The institutions that would participate in a pilot or demonstration project using space applications should make a firm commitment, in cash and/or in kind, to the implementation of the project, as this will add credibility to the project proposal. The institutions that have been identified as users in the project proposal should clearly indicate their commitment to using the space application upon demonstration of its cost-effectiveness;

(c) *Education and training*: There is a pressing need to provide developing countries with further education and training opportunities in all areas of space science and technology. Trained personnel are essential if space technologies are to be integrated into operational programmes.

4. *Recommendations for further action*:

(a) To study carefully, in close liaison with the space industry, how it can contribute to the existing Trust Fund for the United Nations Programme on Space Applications. This should be done by the Action Team in order to present proposals to the Scientific and Technical Subcommittee at its forty-first session, in 2004;

(b) The United Nations should urgently request all Member States to contribute to the Trust Fund for the United Nations Programme on Space Applications. It would be a matter of a strict application of the corresponding provisions of the resolution adopted at UNISPACE III, which stipulates that all States should be invited to support financially or in kind in an annual letter from the Secretary-General that will, inter alia, identify priority project proposals for enhancing and assisting technical cooperation activities, in particular for human resources development;[a]

(c) In order to mobilize space industry on the partnership issue, the Scientific and Technical Subcommittee should prepare a "white paper" that should be submitted to space industry. The document should contain a presentation of the main recommendations of UNISPACE III and the needs for the coming years;

(d) To study how to promote contributions by non-governmental entities, including space industry and individuals, to an integrated system for the management of natural disaster consequences;

(e) Experts in development banks or aid agencies are not always aware of the possibilities of space application techniques. It could be useful to include in the United Nations Programme on Space Applications the organization of short workshops for such experts in order to present the possibilities offered by space applications to support development, utilizing the results of pilot projects or techniques already used in application programmes.

5. *Implementation already initiated*:

No concrete action has been undertaken.

6. *Indication of impediments to implementation*:

(a) The difficulty to convince development banks and aid agencies to support development programmes using space applications;

(b) Well-trained people are necessary, but they need good prospects. This requires a long-term political commitment.

7. *Benefits to be derived from implementation*:

Increased availability of funding sources for the implementation of the recommendations of UNISPACE III.

8. *Progress made by the Action Team*:

The report prepared by the Action Team (A/AC.105/L.246) should lead to greater awareness of the difficulties faced by developing countries in the utilization of space applications. The report should help decision makers, including those in development banks and aid agencies, in the use of space applications for the implementation of development projects. As the funding problem is inherent in a large number of recommendations of UNISPACE III, the proposals contained in the report should certainly be useful for enhancing the implementation of the recommendations.

[a] *Report of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space, Vienna, 19-30 July 1999* (United Nations publication, Sales No. E.00.I.3), chap. I, resolution 1, sect. I, para. 1 (f).

Annex VI

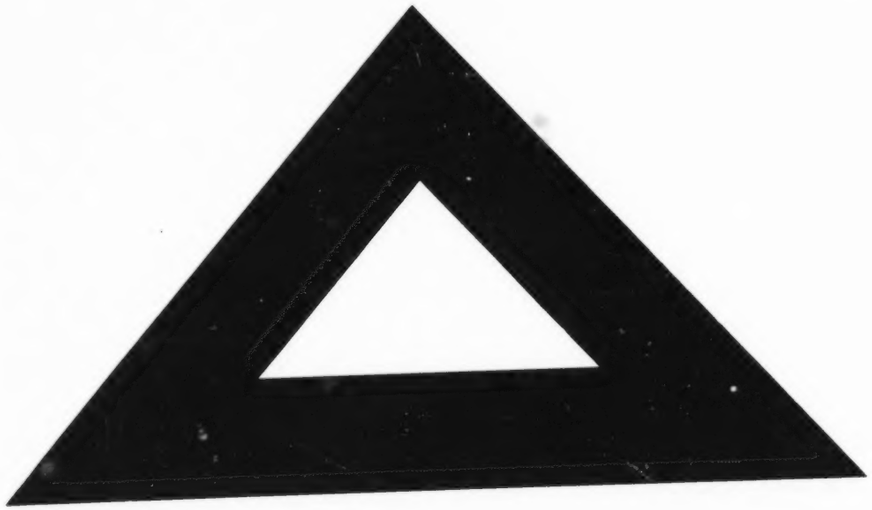
List of reference documents

A. Reports by Member States

1. The following documents contain reports submitted by Member States on their activities to promote international cooperation in the peaceful uses of outer space, including information on new mechanisms and initiatives that they have implemented in response to the recommendations of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III): A/AC.105/752 and Adds.1-3, A/AC.105/778 and Add.1, A/AC.105/788, A/AC.105/816 and Adds. 1-4.

2. The following countries submitted their reports in the period that followed UNISPACE III: Algeria, Argentina, Australia, Austria, Azerbaijan, Belarus, Brazil, Canada, Cuba, Czech Republic, Finland, France, Germany, Hungary, India, Indonesia, Iran (Islamic Republic of), Japan, Malaysia, Mexico, Norway, Pakistan, Panama, Peru, Philippines, Poland, Portugal, Republic of Korea, Russian Federation, Saudi Arabia, Senegal, Slovakia, Slovenia, South Africa, Sweden, Syrian Arab Republic, Thailand, Turkey, Ukraine, United Kingdom of Great Britain and Northern Ireland, United States of America.

B. Reports by international organizations

1. The following documents contain reports submitted by entities of the United Nations system and intergovernmental and non-governmental organizations having permanent observer status with the Committee on the Peaceful Uses of Outer Space on their activities in response to the recommendations of UNISPACE III: A/AC.105/819 and Add.1.

2. The following organizations submitted their reports in the period that followed UNISPACE III: the United Nations Office for Project Services, the Economic and Social Commission for Asia and the Pacific, the United Nations Environment Programme, the Food and Agriculture Organization of the United Nations, the International Astronautical Federation, the Regional Centre for Remote Sensing of the North African States, the World Health Organization, the World Meteorological Organization, the United Nations Institute for Training and Research, the Committee on Space Research and the International Society for Photogrammetry and Remote Sensing.